GENERAL MEASURE

杰 • 曼 • 科 • 技

GMT-H2

Instruction Manual

110611050003
V01.00.02_01

 **Warnings**	The product is powered by **DC24V power** supply, and using **AC220V power by mistake will permanently** damage the meter.
	Keep the meter well grounded.
	The product is electrostatic sensitive equipment. Please take anti-static measures during use and maintenance

Standards & Certification	Product standard: **GB/T 7724 -- 2008** Verification regulation**: JJG 669-2016** **CMC accuracy** level 3; Guangdong **System 0000000**48; Safety certification: **CE**

Contents

Chapter 1 General Description

1.1 Functions and Characteristics

Shell type	Hanging, stainless steel waterproof case	
Sensor interface	**1 way** 6-wire analog sensor scale interface for up to **8** 350Ω **sensors**	
Display	**2** "6-bit **LED** nixie tube	
Interface	**2** way RS**485** interface, **1** way RS**232 interface**	
	4 In and **6** out transistor input/output interfaces	
	1 analog output interface (current/voltage optional)	
	Optional interface	Single network port communication port
		Profinet bus interface
		Ethernet/IP bus interface
Preset point function	Four preset points are provided, which can be set as required	

1.2 Technical **Specifications**

Power supply	**24VDC (18 to** 36**VDC)**
Dimension	**175*150*75mm**
Product weight	**2165g**
Certified working environment	**-10 ~ 40℃； 90%R.H** without dew
Working environment	**-20 ~ 60℃； 90%R.H** without dew
Storage environment	**-40 ~ 60℃； 90%R.H** without dew
Power	**10W**
Platform excitation voltage	**5V 200mA(MAX)**
Load cell requirements	**1** analog scale table interface ,connect up to **8** 350Ω **sensors with** 1mV/**V,** 2mV/V**, and 3mV**/**V** sensitivity
Sensitivity/Certified sensitivity	**0.01 uV/uV/d d / 0.5**

Non-linearity	**0.01% F.S**
A/D conversion speed	Default**: 480** times/second (parameter optional)
Display Precision	**1/1000000**
Keyboard	5-key sounding mechanical keys
Decimal point position	**0**, **0.0**, **0.00**, **0.000**,**0.0000**; **5 optional**

1.3 Panel **Diagram**

Status indicator:

POWER: Power indicator**,** lights up when indicator is power on.

ZERO: Zero, Light on when present weight is within 0±1/4d.

STAB: Steady indicator light; When the weight of the material on the scale or hopper changes within the stability range, that is, the weight is stable, the indicator lights up.

NET: Net weight indicator, can be defined as serial port 1/ serial port 2/ serial port 3/ network port/net weight, can be selected through the system

parameters **SYS-- t5--t5.2**. The default net weight indicator, display weight for net weight, the indicator light; If it is defined as a serial port or network port, it blinks during communication.

COM1: Serial port/network port communication indicator, can be defined as serial port 1/ serial port 2/ serial port 3/ network port, can be **selected** by system parameter **SYS-- t5--t5.3**, the default serial port 1, **RS485_1** communication, the indicator blinks.

COM2: Serial port/network port communication indicator, can be defined as serial port **1**/ serial port **2**/ serial port **3**/ network port, can be **selected** by the system parameter **SYS-- t5--t5.4**, the default network port, network port communication, the indicator blinks.

Key description:

:Zero/ESC, exit the current operation or return to the previous menu key; In the state of net weight, perform skin clearing; Under the state of gross weight, execute zero clearing; Calibration information interface, long press to clear the calibration information.

: Parameter selection key,data input operation, when the main display blinks, press this key to add **1** flashing bit, if the blinking position is **9**, press this key to add **0** data; Peeling is performed in the state of gross weight, and the net weight is displayed;

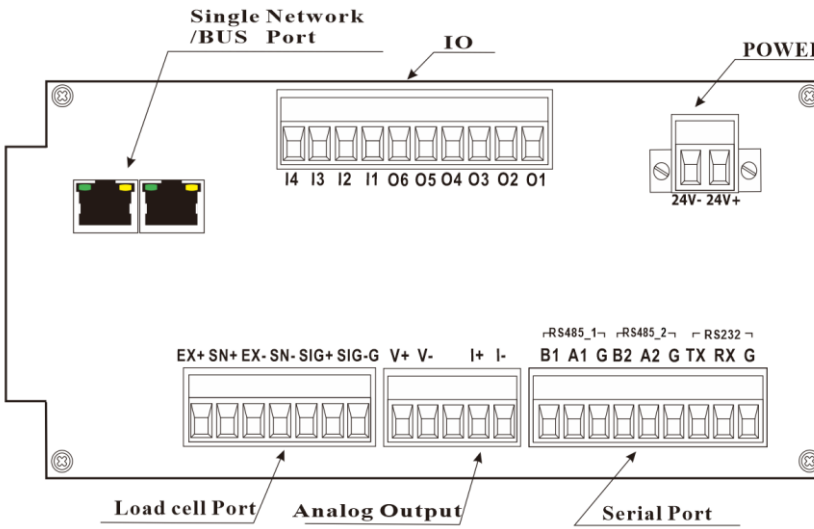
: Menu function select key, when input the data , the main display blinking bit flashes, press this key, the blinking bit moves to the right one, if the current blinking is the last bit, press this key, then the blinking bit moves to the leftmost bit.

: Confirm key, confirm to enter the current option when CAL or

parameter setting; Data input operation confirms the data and end the operation; Under the main display interface, short press to switch the display weight and analog quantity; Long press to enter the interface of viewing version information, in this interface, short press to switch software version and software time; On the interface of software time, long press again to enter the interface of viewing calibration information, and on this interface, short press to switch calibration times and calibration verification code.

PRINT: Long press to print/short press to walk the paper; In the parameter input state, press this key, flicker bit data reset to **0**; Under the zero millivolt interface, press this key to clear millivolts.

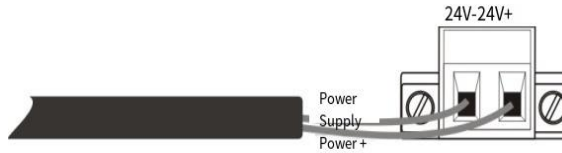
1.4 Interface **Diagram**



Chapter 2 Installation and Wiring

2.1 Connection of Power Supply

GMT-H2 Stainless steel converter controller uses DC **24V** power supply. The correct wiring of the power terminal is shown below:



※ **PLEASE PAY ATTENTION TO THE POSITIVE AND NEGATIVE POLARITY OF THE POWER SUPPLY AND DO NOT CONNECT IT BACKWARDS.**

2.2 Sensor Connection

GMT-H2 module needs to be connected with external resistance strain bridge sensor, and the sensor is connected to the module in the six-wire system as shown in the following figure. When a four-wire sensor is selected, SN+ **and EX+** of the module must be **short-connected**, and SN- **and EX-** must be **short-connected.** Each port of the sensor connection terminal is assigned as:

Ports	**EX+**	**SN+**	**EX-**	**SN-**	**SIG+**	**SIG-**	**SHLD**
6-wire	Power positive	Induction positive	Negative power supply	Inductive negative	Positive signal	Signal negative	Shielded wire
4-wire	Power positive		Negative power		Positive signal	Signal negative	Shielded wire

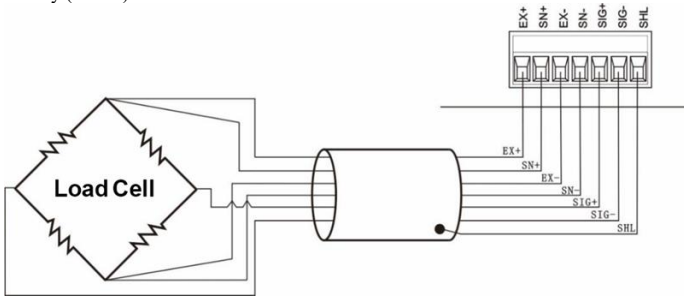
What to watch for:

1. As the output signal of the load cell is an analog signal sensitive to electronic noise, shielded cables should be used for load cell wiring and laid separately from other cables, especially away from AC power supply.

2. For short transmission distance and little temperature changes in the occasion or

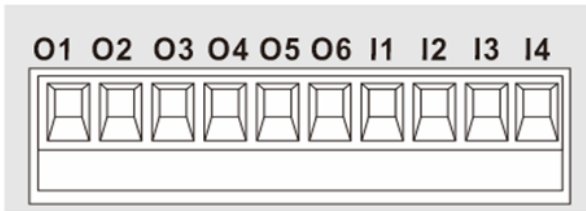
accuracy requirements are not high occasions can choose the four-wire sensor; But for far transmission distance or high accuracy requirements of the application should choose the six-wire system sensor;

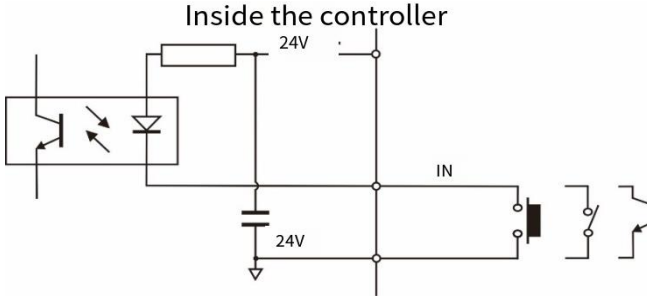
3. For applications where multiple sensors are connected in parallel, make sure the sensitivity (mV/**V**) of each sensor **is consistent.**



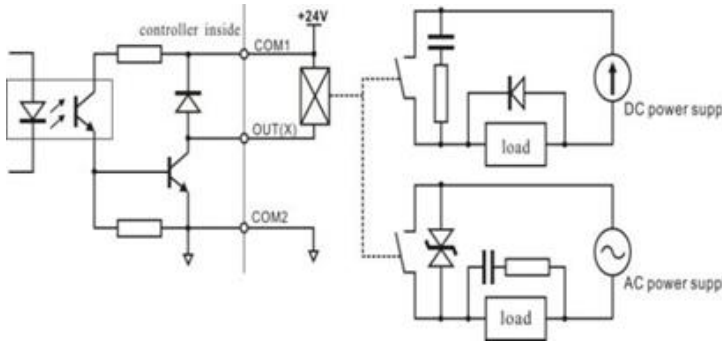
2.3 Switch **quantity interface**

GMT-H2 stainless steel transmitter includes **10** way input and output controls **(4** in **/6** out). Photoelectric isolation mode is adopted, and the instrument is driven by internal power supply. The switching input of the instrument is low and effective; Output transistor collector open output mode, each drive current up to **500mA**, **full load** current up to 3A. The terminal wiring is shown in the figure below:





Input interface diagram



Output interface diagram

GMT-H2 stainless steel transmitter IO can be customized for the convenience of the user wiring and some special applications,IO contents refer to Chapter 9.1. When the product leaves the factory, the default definition is as follows:

Output		Input	
OUT1	Undefined	**IN1**	Undefined
OUT2	Undefined	**IN2**	Undefined
OUT3	Undefined	**IN3**	Undefined
OUT4	Undefined	**IN4**	Undefined
OUT5	Undefined		
OUT6	Undefined		

2.4 Analog interface

The instrument has **1** analog output function, interface **I+**, **I-**, **V+**, **V-**. The output mode current/voltage can be selected in the analog parameters list and the analog calibration method, please refer to Chapter **6** for details. Under the normal display state, you can view the analog output by pressing the button Wt/AO ENTER. The format is **A x.xxxx**.

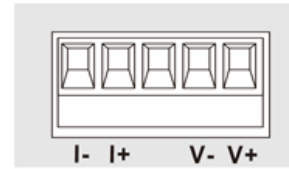
The analog output interface is defined as shown on the left:

V+: positive end of the voltage output;

V-: negative end of voltage output

I+: positive end of current output;

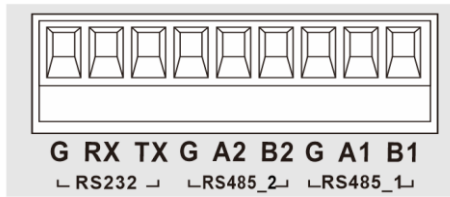
I-: negative end of current output



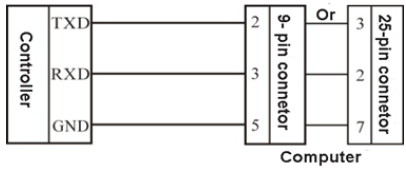
2.5 Serial Port Connection

GMT-H2 are equipped with three **serial ports**: two **RS485** serial ports and **one RS232 serial port. Support a variety of** protocols: **Modbus-RTU protocol**, **command mode**, continuous mode, printing, etc.

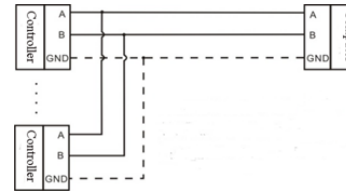
RS485_1(Serial Port1), RS485_2(Serial Port2), RS232(Serial Port3) ports are shown as follows**:**



RS232 connection mode:



RS485 connection mode:



※ In **RS485** mode, the interface must be connected to wires **A** and **B**, **GND** is the signal ground. In the case of serious interference, low-resistance wires are used to connect the signal ground, so that the ground potential of each node is equal, which can significantly improve the communication quality.

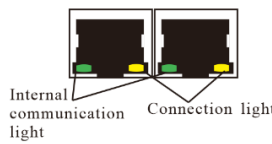
※ Under **RS232** mode, all three wires must be connected, **including Rx**, **Tx** and **GND**.

2.6 Network **Port** Connection

GMT-H2 supports common network port communication, **PN**, and **EIP bus communication** (select 1 of 3 network port communication **functions**, **order** need to declare). Support TCP protocol (**Modbus/TCP\GM-Cont TCP**) **and PN**, **EIP** bus protocol.

Single network port matching, support **Modbus-TCP protocol**, **GM-Cont continuous** mode.

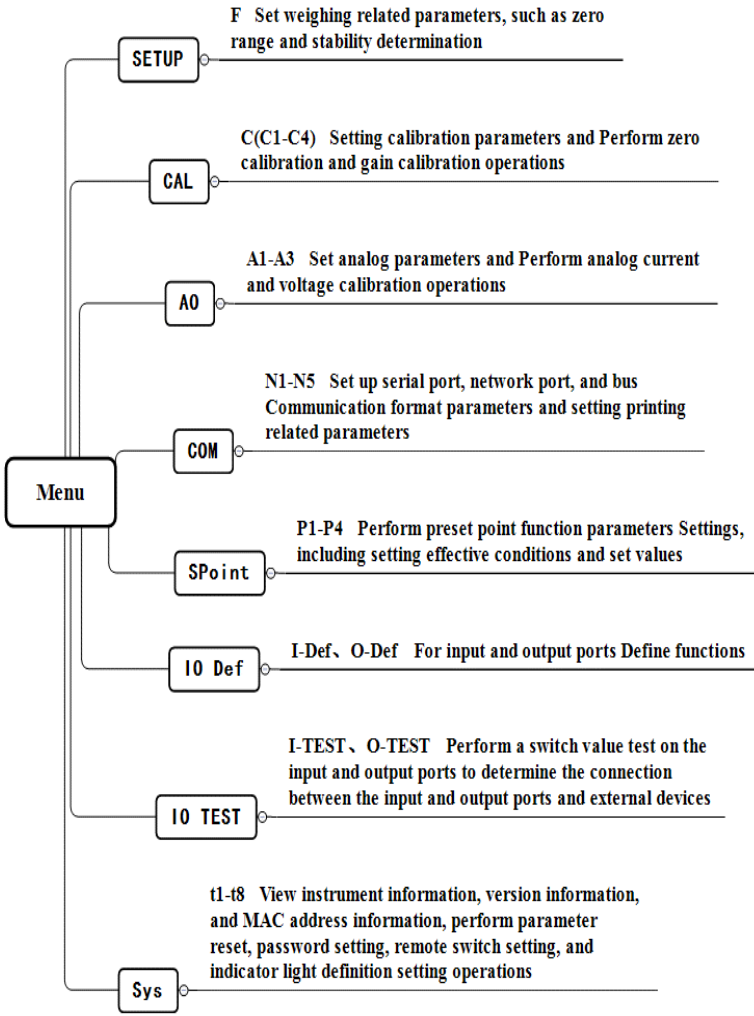
With a dual-network port option, it is used to cascade multiple devices.



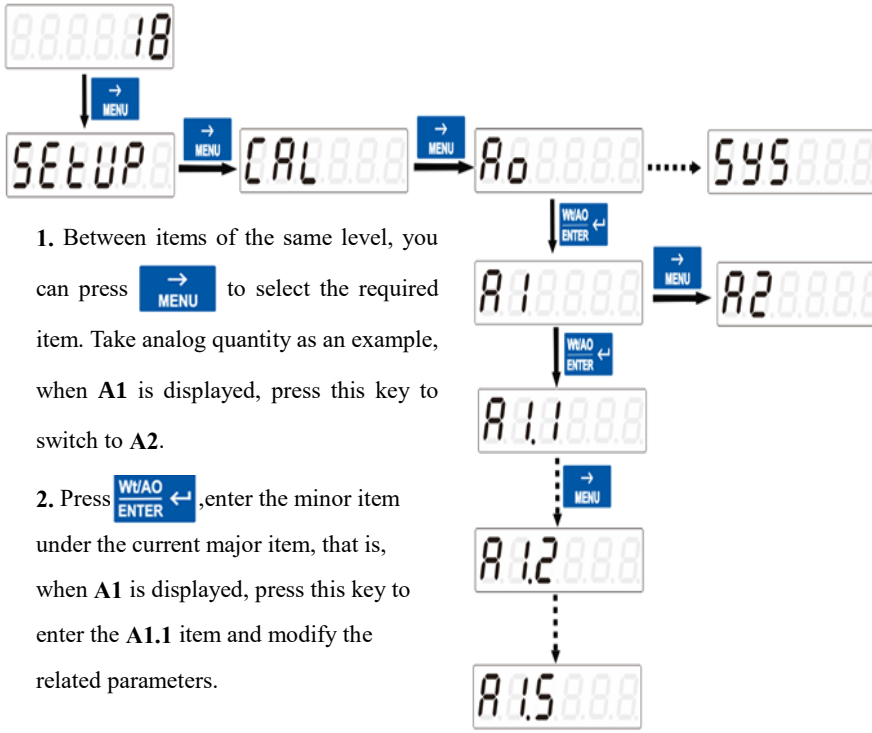
Internal communication light: The hardware connection is normal, and the internal communication light of the instrument is steady on.

Connection light: The network cable is connected properly and the connection light blinks.

Chapter 3 Menu overview



3.1 Setting Flowchart



1. Between items of the same level, you can press MENU to select the required item. Take analog quantity as an example, when **A1** is displayed, press this key to switch to **A2**.

2. Press Wt/AO ENTER ,enter the minor item under the current major item, that is, when **A1** is displayed, press this key to enter the **A1.1** item and modify the related parameters.

3.2 Parameter setting method

There are two types of **GMT-H2** parameter Settings: option class and numerical class. Option class parameters are in the parameter value screen, select with the key TARE OPTION. Numeric class parameters Under the parameter interface, select numeric bits with keys MENU and numeric values with keys TARE OPTION.

For example:

Numerical classes:

Enter the parameter item blinking bit from the first **0** to the second adjust the value to **2** confirm the modification

Option class:

Enter the parameter item adjust **OFF** to **ON** confirm the modification

Chapter 4 Basic Parameters (Setup)

4.1 Parameter List

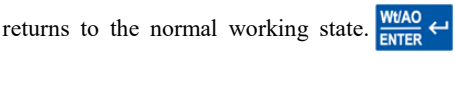
Number	Initial value	Description
F1	There is no	
F1.1	**0**	PWR-On Zero Range (**0 to 101%** optional). **0**: Disables automatic zero clearing during power-on. **1-100:** Performs automatic zero clearing within the maximum range **1-100%** during power-on. **101**: Restores the last zero before turn off
F1.2	**0**	TrZero Range (**0 to 99d** optional). This parameter is used to automatically calibrate slight drift of zero due to a small amount of material remaining on the scale body. When this parameter is **0**, the zero tracking function is turned off.
F1.3	**20**	Zero Range (**00%~99%** of maximum range). If the current weight is greater than the maximum range* Zero range, the display displays "**Error2**" alarm; If the scale is not stable for zeroing, the monitor will display "**Error3**" alarm.
F1.4	**1**	STAB Range (**0 to 99d** optional). If the weight continues to change within the stability range, the weight value is considered stable.
F1.5	**4**	Digital filter level **0**: no filter; **9**: strongest filter (**0~9** optional)
F1.6	**0**	Steady-state filter level (**0 to 99d** optional) **0: Turns off** the steady-state filter. **Non-0**: Starts the steady-state filter if the weight changes within the range
F1.7	**480**	**AD** sampling rate: **30, 60, 120, 240, 480, 960** times /**s** optional
F1.8	**OFF**	Tare record function switch **OFF**: turn off tare memory function; **ON**: After power off and restart, the instrument still retains the previous tare weight.
F1.9	**1000ms**	TrZero Time (**1-5000ms** optional) during the tracking time, if the weight change is less than the tracking range, the system will automatically track the zero position

F1.10	**1000ms**	STAB Timer (**1-5000ms** optional) Range： **1-5000** Milliseconds.If the weight range does not exceed the STAB range during that time, the weight is stable
F1.11	**1**	Force Zero Threshold(**1-999999** optional) Set the Force zero threshold value,If the current weight is less than or equal to this set value and not 0, one of the force zero return conditions is met.
F1.12	**3**	Force Zero Timer(**1-20s** optional) Set the Force zero time,The weight remains stable within the reset threshold and within this set time, meeting the force zero reset condition.
F1.13	**OFF**	Force Zero Switch **OFF:**Turn off the force zero function, **ON:**After being turn on, the current weight is less than or equal to this set value and not 0 and remains stable within this set time.After force zero Time, the Force Zero operation is excuted.

Chapter 5 Calibration (CAL)

5.1 Calibration Instructions

(1) When **GMT-H2** weight display or any part of the weighing system is changed for the first time and the current device calibration parameters cannot meet user requirements, the display should be calibrated. The calibration can determine the system zero position and gain of the weighing system.

(2) The user changes a parameter, after completing the setting, the key saves the current setting, the key returns to the normal working state. 

(3) Refer to Chapter 14 for the error alarm information in the calibration process.

5.2 Calibration parameters

Number	Initial value	Instructions
C1		
C1.1	**kg**	Unit, range: **t**; **kg**; **g**; **lb**
C1.2	**0**	Decimal point**,** range: **0**; **0.0**; **0.00**; 0.000**; 0.0000**
C1.3	**01**	Division, the instrument indicates the minimum change in value Range: **1,2,5,10,20,50**
C1.4	**10000**	Maximum range, the maximum display value of the meter, generally take the sensor range. Range: **0~999999** can be set
C2	Zero calibration, carry out zero calibration and weightless zero calibration, refer **to** Chapter 5.3.2 zero calibration.	
C3	Weight calibration, carry out weight gain calibration or theoretical value calibration, refer **to** Chapter 5.3.3 weight calibration.	
C4		

C4.1	**1.00000**	Calibration correction coefficient, after calibration, if the zero point is correct, there is a deviation of weight, can be used to correct the weight value. How this value is calculated: If the meter shows weight **A**, but the weight is **B** after weighing, the correction factor is calculated by :(actual weight **B*** current correction factor)/ displayed weight **A**

5.3 Calibration process

Description of CAL steps:

a) Under the normal display, enter the **CAL** calibration interface and input the correct calibration password.

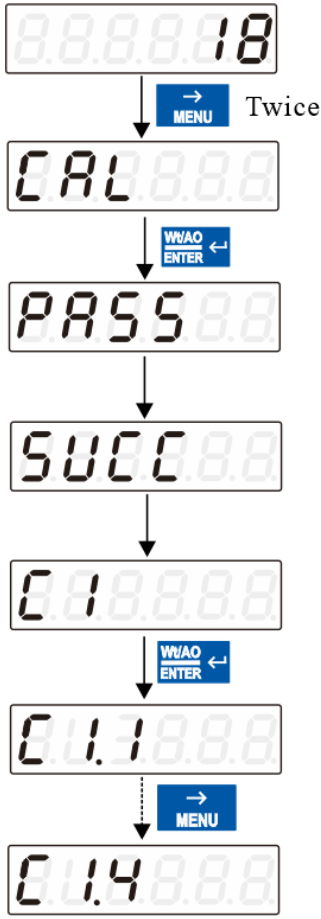
b) Select the required unit, decimal point, minimum indexing and maximum range in **C1** parameter. Refer to **Chapter 5.3.1** Parameter selection for details.

c) For zero point calibration, refer to the Zero Calibration flowchart in **Chapter 5.3.2**.

d) For weight gain calibration, refer to Gain calibration flow chart in **Chapter 5.3.3**.

Note: If it is not convenient to load weights on site for system calibration, manual input zero calibration (refer to manual input in **Chapter 5.3.2**) and theoretical value calibration (refer to Chapter 5.4) can be used for **weightless** calibration.

5.3.1 Parameter selection



1. In this state, press MENU (twice) to display **CAL**. Press to W/AO ENTER the password input interface.

2. Enter the password correctly and enter the **C1** parameter selection interface automatically one second after **SUCC** is displayed. Combine TARE OPTION and W/AO ENTER select the corresponding unit, decimal point, indexing value and maximum range according to the demand.

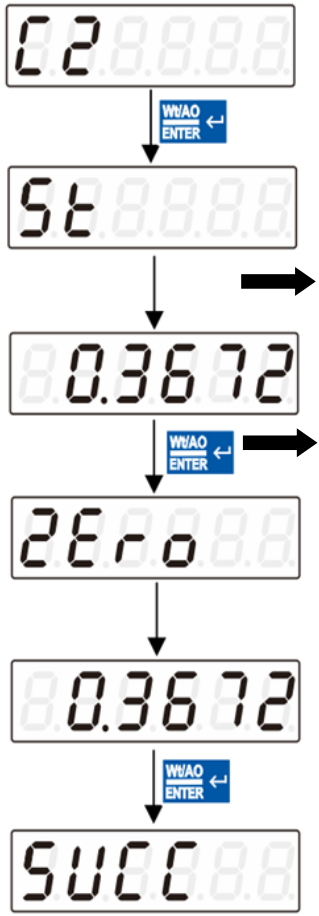
5.3.2 Zero Calibration

Zero calibration means zero calibration of the scale platform.

There are two ways to do zero calibration: automatic acquisition and

manual input. When the new equipment or weighing structure is adjusted, the "automatic acquisition" method must be used for zero calibration.

Automatic acquisition method:



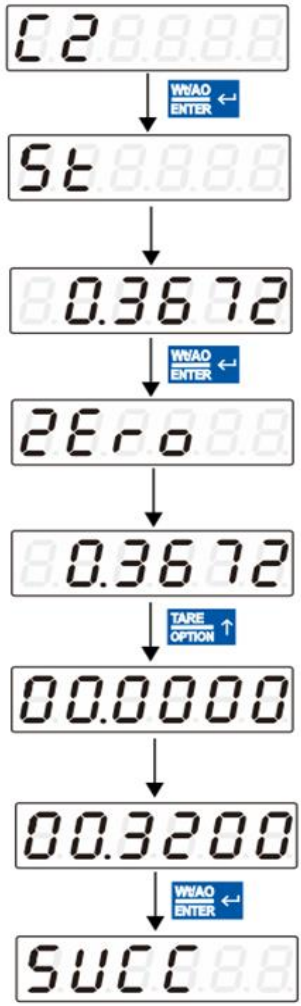
1. Millivolt display interface, the display value is similar to the value obtained by users using a multimeter to measure the **SIG+** and SIG- end of the sensor, the specific function and application description refer to Section **5.5**.

2. Zero calibration interface, clear the scale, wait for stable display (**STAB** indicator light), press Wt/AO ENTER, display **SUCC** complete zero calibration.

※ If zero is not calibrated, press ZERO ESC to return **C2**.

Manual input:

※ Generally used for no weight calibration, the weight calibration recorded data recorded value for manual input.



Zero calibration interface, press TARE OPTION, enter the zero millivolt value of the historical record, press Wt/AO ENTER, display **SUCC** to complete the zero calibration.

※ If zero is not calibrated, press ZERO ESC return **C2.**

5.3.3 Weights Calibration

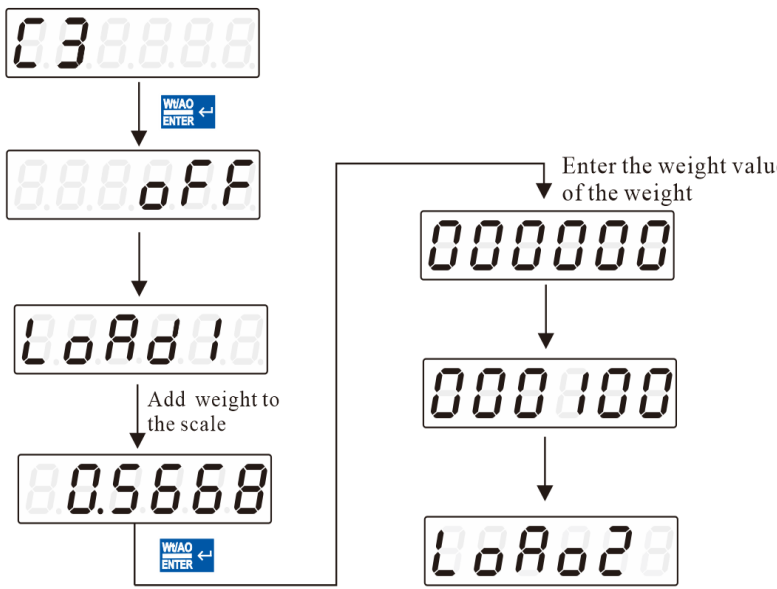
Use standard weights for weight calibration. Calibration steps:

1）Enter the gain calibration interface **C3**, the display **OFF** means enter the weight gain calibration**;**

2）This instrument supports **5** calibration points, take the CAL Point**1** calibration as an example, display **Load1**, add weights to the weighing platform, when the stable output is effective, press the button Wt/AO ENTER;

3）Display **000000** interface, input weight corresponding weight value;

4）Press Wt/AO ENTER key to complete the standard point**1** weight calibration, single point calibration, after the completion of the calibration of the first weight point,press ZERO ESC and exit.



Using multi-point calibration should note:

1） Users can choose the number of calibration points, such as single point calibration, after the completion of the calibration of the first weight point can exit.

2） Cross-point calibration is not allowed, and gain points are calibrated in sequence. For example, when **3-point** calibration is adopted, it is necessary to calibrate point **1**, point **2** and point **3**, but it is not possible to calibrate point **3** and point **4** after completing **point 1 by crossing point** 2**.**

3） For multi-point calibration, the weight should be increased. For example, the weight of standard point **2 must be greater than the** weight of standard point **1, otherwise the alarm of "Error" will appear.**

5.4 Theoretical value calibration

Theory CAL refers to weight calibration operation by connecting sensor sensitivity and sensor range value through input.

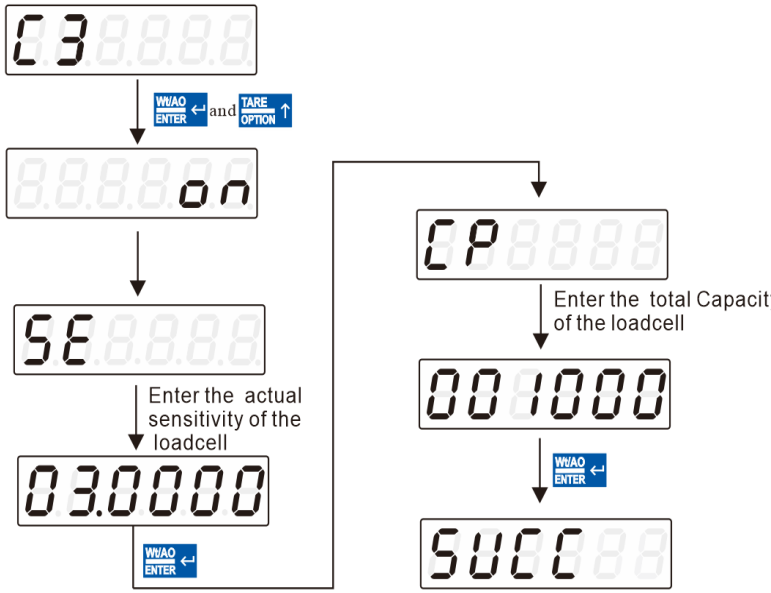
Theory CAL needs **3** steps:

1） Enter the gain calibration interface **C3**, display **ON**, it means open the " Use T-CAL " switch, enter the theoretical value calibration interface**;** If **OFF** is displayed, it will enter the weight gain calibration interface.

2） Prompt **SE**, set sensor sensitivity (such as connecting multiple sensors, enter the average sensitivity)

3） Prompt **CP**, set the total sensor range (e.g. connect multiple sensors, enter total sensor range and)

4） Press W/AO ENTER ↵ the button to display **SUCC**, and the theoretical value calibration is completed



5.5 millivolt display application

This function is mainly used for system detection, four Angle error detection of force transmission mechanism, sensor linearity detection.

1. System detection

1) When the millivolt number changes with the loading weight, it indicates that the sensor connection is correct and the force transfer mechanism works normally;

2) When the millivolt number is **OFL**(or **-OFL**), it indicates that the pressure under the sensor is too large (or too small), and the unloading weight (or loading weight) should be processed. If it is still **OFL(or -OFL**) after processing, it may be caused by the following reasons:

a) The force transmission mechanism is faulty. Please check and

remove it

b) Sensor wiring error, please check and remove

c) The sensor is damaged, please replace the sensor

2. Detect the four Angle error of the force transmission mechanism

Load and record the corresponding millivolts at the four corners of the weighing platform (or weighing bucket) respectively. If there is an obvious error, please adjust the force transmission mechanism.

3. Sensor linearity detection

In the range of the weight transmitter, carry out multiple equal weight loading, before each loading with the zero key to clear millivolts, record the millivolt value after loading; After the completion of all weight loading, if one or more millivolts recorded differ greatly, it indicates that the linearity of the sensor is not good, please replace the sensor or adjust the force transmission mechanism.

Chapter 6 Analog Parameters(AO)

6.1 Analog parameters

Number	Initial value	Instructions
A1		
A1.1	**4-20mA**	Analog Type**,** range: 4-20mA**,** 0-10V**,** **i_User(user current)**, u_User(**user voltage)** Note: The analog output mode is user current/user voltage only with **A1.2~A1.5** parameters
A1.2	**XXXXXX**	Minimum current/voltage
A1.3	**XXXXXX**	Zone Zero current/voltage
A1.4	**XXXXXX**	Range current/voltage
A1.5	**XXXXXX**	Maximum current/voltage
A2	Analog current calibration, specific operations refer to Chapter 6.2 Analog calibration	
A3	Analog voltage calibration, specific operations refer to Chapter 6.2 Analog calibration	

6.2 Analog calibration

The output of analog quantity has been calibrated when the instrument leaves the factory, so the user does not need to calibrate the output of analog quantity. If the analog output of the instrument is abnormal, the user can calibrate the analog output by himself. The calibration method of current and voltage is the same. The calibration method here takes current calibration as an example (it is recommended to calibrate under the guidance of professional personnel).

1) **The** multimeter is connected to **the I- and I+** output outlets **of the meter.**

2) Combine the TARE OPTION ↑ and Wt/AO ENTER ↵ key to modify the **DA** code and view the current value of the multimeter.

3)Input the multimeter to read the value

3) Press Wt/AO ENTER ↵ key, complete the analog current calibration.

5) Current calibration supports **5** points calibration, other points calibration reference point **1**.

Chapter 7 Communication Parameters (COM)

7.1 Communication Parameters

Number	Parameter item	Instructions
N1	**RS485_1 Serial port parameters**	
N1.1	**01**	Slave ID, range: **01-99**
N1.2	**38400**	Baud rate, range**: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200**
N1.3	**Modbus-RTU**	Communication protocol: **Modbus RTU**, r-Cont**,** r-SP1**, tt(continuous** transmission), CB920**,** rE-Cont**,** rE-Read**, PT650D, YH(protocol), Print, WI-125**
N1.4	**8-E-1**	Data Format**,** range: **8-N-1, 8-E-1, 8-O-1, 7-E-1, 7-O-1**
N1.5	**AB-CD**	**Modbus** High and low words, range: **AB-CD** (**high words** first), **CD-AB** (**low words** first)
N1.6	**20ms**	Continuous send interval, the time interval between frames under the continuous send protocol. Range: **0-1000ms**
N1.7	**OFF**	Whether to send checksums under the tt(Toledo continuous Mode) protocol. **OFF**: No verification is sent**. ON**: sends the verification. **YH** (continuous mode) **OFF:** Does not judge if it is stable; (send live weight) **ON:** Judge if it is stable (send real-time weight when stable, send 0 when unstable)
N2	**RS485_2 Serial port parameters**	
N2.1 ~ N2.7	Refer **to RS485_1 serial port parameters**	
N3	**RS232 Serial port parameters**	

N3.1 ~ N3.7	Refer **to RS485_1 serial port parameters**	
N4	**Network port communication parameters**	
N4.1	**Mb-TCP**	Communication mode: If a common network port is selected**, the following protocols are available**: **Mb-TCP (Modbus-TCP), GM-Cont (GM-Cont/TCP)**
N4.2	**AB-CD**	Double word mode, range: **AB-CD** (high word first), **CD-AB** (low word first)
N4.3	**20ms**	Send interval, used to control the time interval between frames. Range: **0-1000ms**
N4.4	**502**	Port, range: **1-65535**
N4.5 ~ N4.8	**192.168.000.001**	Local **IP** address segment ranging from **0.0.0.0 to 255.255.255.255.**
N4.9	**OFF**	Remote setting switch(This parameter is visible when selecting **PN/EIP** attach board) Range: **OFF**, **ON**; **ON:** During PN/EIP communication**,** working parameters and some calibration parameters can be modified through the master station. **OFF:** During PN/EIP communication**, the** modification of parameters at the master station does not take effect.
N4.10	**Flo wt**	Data type, **PLC Display** type selector switch. Range: Int**: integer weight** display, Flo wt**(Float)** : **floating point** weight display

N5	Print parameters	
N5.1	Chinese	Scope: Chinese **(Chn)**, English **(En)**
N5.2	**0**	Print content, range: 0- Show weight, 1- gross weight, 2- net weight, 3- Net weight + Tare (two lines), 4, Gross weight + net weight + Tare (three lines).
N5.3	**2**	Print interval, number of lines spaced between each print, range: **0-99**

7.2 Print Format

Communication parameter **Com-- N1-- N1.3** When the protocol is selected as "Print", long press PRINT under the main interface to print the instrument data, or set the input to I11 print, and print out through the switch quantity; Short press PRINT the paper.

Examples of print formatting applications:

Parameter Settings		Print bill contents (in Chinese)
Printing language	**Chn**	Ticket No. Xxxxxxx1
Print the contents	Display weight	Show weight
Print spacing	**2**	Net weight X.XXXX kg
		---------- (second print)

Chapter 8 Presetting Point Parameters (SPoint)

Press the key → MENU five times under the main display interface, **SPoint** will be displayed. Under this interface, press the button Wt/AO ENTER ↵, if the parameter password switch **t6.2** is **ON**, then the parameter password needs to be input; if it is **OFF**, then the set point parameter can be set **P1** without entering the password; press the button Wt/AO ENTER ↵ to enter the **P1.1**, set the relevant set point parameters according to the parameter table, and press Wt/AO ENTER ↵ save after modification. Then press ZERO ESC ↖ to exit to item **P1**, and press → MENU to set the next parameter. The same can be used for parameter Settings of other parameter items.

Note: There are four major items in the set point. Set point **X** represents "set point **1** to **4**", which can be set by the user as required.

No.	Initial value	Instructions
P1-P4	/	**Parameter first major item**
PX.1	**OFF**	Whether the state change needs to be stable; **OFF**: No; **ON**: yes.
PX.2	**0.2**	Minimum duration;**0 to 99.9 can be set**
PX.3	**P1.3 = 1** **P2.3 = 5** **P3.3 = 0** **P4.3 = 0**	Valid condition: **0**: prohibited; **1**: < less than; That is, if the weight **is less than PX.4**, the output is valid, but it is not. **2**: <= less than or equal to; That is, if the weight is less than or equal to PX.4, the output is valid, but it is invalid. **3**: == equals; That is, when the weight **is equal to**

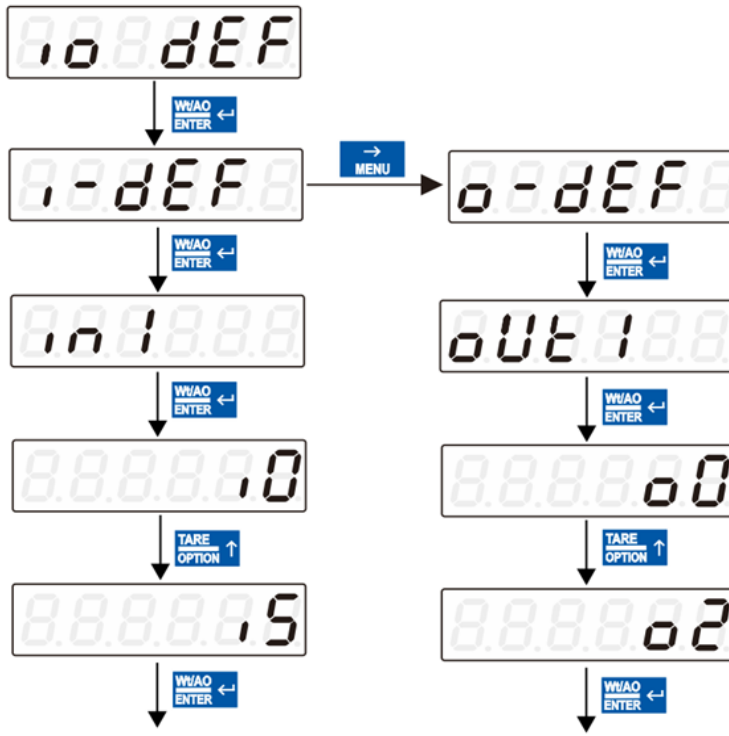
		PX.4, the output is valid, but it is not. **4**: >= greater than or equal to; That is, if the weight **is greater than PX.4**, the output is valid, but it is not. **5**: > greater than; That is, if the weight is greater than **PX.4**, the output is valid, but it is not. **6**:! = does not equal; That is, if the weight is **not equal to PX.4**, the output is valid, but it is not. **7**: _<>_ outside the interval, that is, when the weight is less than **PX.4** or greater than **PX.5**, the output is valid, but it is invalid anyway. **8**: =<__>= within the interval, that is, when the weight is greater than or equal to **PX.4** and less than or equal to **PX.5**, the output is valid, but invalid anyway. ; **9**: external trigger. If it is **IO**, the trigger does one state transition at a time. If it is a command, it is judged by accepting valid or invalid commands.
PX.4	**0**	Set value **1**; **0** to **999999** can be set
PX.5	**0**	Set value **2**; **0 to 999999** can be set

Chapter 9 IO Definition

9.1 IO Definition

Under the main display interface, press the key → MENU **6** times and the meter will display io **dEF**. Under this interface, press the key W/AO ENTER ↵ to enter the interface of custom setting of switch quantity. If the **t6.2** item of the parameter password switch is **ON**, you need to enter the parameter password before entering the custom setting of the switch quantity.

IO Definition operation: Follow the steps to set the definition content of each switch quantity. For example, define **IN1** as the reset input and **OUT1** as the output of set point **1**. The Settings are as shown in the figure, and the other input-output Settings are the same.



Function meaning of switching quantity:

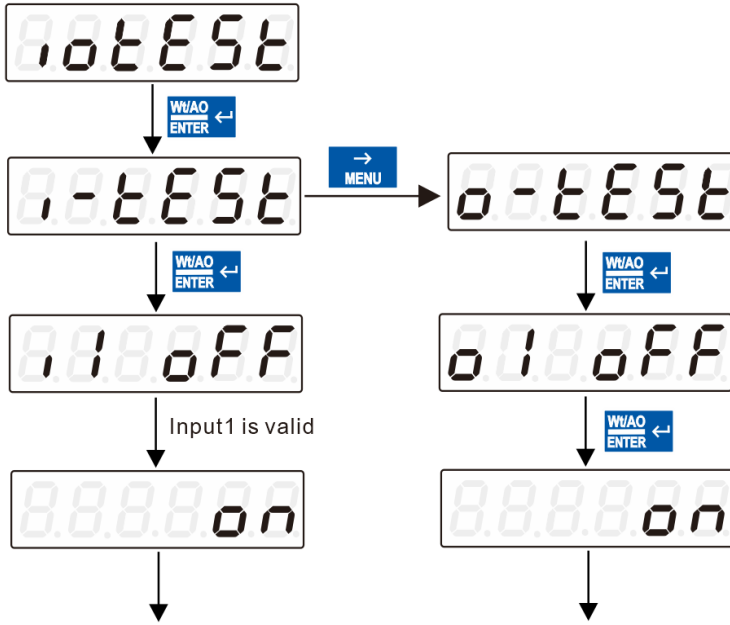
Output quantity		
Code	**Definition**	**Instructions**
O0	None	If the port number is defined as **O0**, this output port is undefined.
O1	SP**1**	Set point **1** status output, this signal is valid.
O2	SP**2**	Set point **2** status output, this signal is valid.
O3	SP**3**	Set point **3** status output, this signal is valid.
O4	SP**4**	Set point **4** status output, this signal is valid.
O5	Stable	This signal is effective when the meter is in steady state.
O6	Overflow	This signal is effective when the meter weight shows an overflow.
Input quantity		
Code	**Definition**	**Instructions**
I0	None	If the port number is defined as **I0**, this input port is undefined.
I1	SP**1**	The effective set point **1** state of the signal will be set to invalid and will need to be valid again after the comparison condition becomes invalid before the effective state can be output.
I2	SP**2**	The valid set point **2** state of the signal will be set to invalid and will need to be valid again after the comparison condition becomes invalid before the valid state can be output.

I3	SP**3**	The effective set point **3** state of the signal will be set to invalid and will need to be valid again after the comparison condition becomes invalid before the effective state can be output.
I4	SP**4**	The signal's valid set point **4** state will be set to invalid, and will need to be valid again after the comparison condition becomes invalid before the valid state can be output.
I5	Clear zero	If the signal is effective, the instrument will realize zero clearing. This input is the pulse input signal.
I6	Parameter reset	Reset all parameter values when the signal is valid.
I7	Tare/Clear Tare	The signal works once peeling and again effectively peeling
I8	Tare	The signal effectively performs the peeling operation
I9	Clear Tare	The signal effectively performs the peeling operation
I10	Calibration lock	After defining the function, if the signal is valid (level signal), it can enter the state of password input in the first item of the calibration step, otherwise it cannot enter, and prompt the alarm **Error7**. If this function is defined, **MODBUS** cannot calibrate serial ports.
I11	Print	When this signal input is valid, the print function is performed.
I12	Gross/ Net weigt switch	When the signal input is valid, the gross net weight is switched.

9.2 IO test

The instrument switching quantity test function is used to test whether the instrument **IO** switching quantity is correctly connected to the device. It is divided into input port **test i-test** and output outlet test **o-test**.

In the weighing state, press the button (MENU **7** times) to display **ioTEST**. Press Wt/AO ENTER to enter the interface of switching quantity test.



When the external **IN1** input is effective, the input port **IN1** switches from **OFF** to **ON**, as shown in the figure above. Indicates that input port **1** is properly connected. Test other input ports in the same way.

When output test, the state of outlet **O1** is **OFF**. When press Wt/AO ENTER switch to **ON**, the external output **1** is valid, which means that the connection of output **1** is correct. Press MENU to switch other output test.

Chapter 10 System Maintenance (SYS)

Parameter Items	Instructions	
t1 Version information	Check the compile date and time, corresponding version information, calibration times, and calibration verification code in front and background. For details, see Chapter **1.3** Button Description.	
t2 Display test	This screen test, ENTER this screen, screen display **888888**, all indicators are on, press **Enter**, **888888** and indicator flashing to prove that the screen display is normal.	
t3 Parameter reset	**t3.1** All parameters are reset	Show **yes** and hit **ENTER** to restore all parameters to their factory Settings.
	t3.2 Reset the calibration parameters	Show **yes** and hit **ENTER** to restore the calibration parameters to their factory Settings.
	t3.3 Reset application parameters (except for calibration parameters)	Show **yes** and **hit ENTER** to restore parameters other than calibration to factory Settings.
t4 Remote Edit	**t4.1** Calibrate parameter remote editing switch	**ON** and **OFF** are optional. If **ON** is selected, the calibration parameters can be set through the communication port. Otherwise, the communication port is read-only to the calibration parameters.
	t4.2 Remote Edit switch of Application parameters (except for calibration parameters)	**ON** and **OFF** are optional. If **ON** is selected, application parameters can be set through the communication port. Otherwise, the communication port is read-only to application parameters.
	t5.1 Backlight level	Set the display brightness level. Initial value: **mid**;

t5 Indicator customization		Range**: low (**low brightness), **mid** (medium brightness), **high (high** brightness)
	t5.2 NET Indicator Definition	Initial value: **4**; Range: **0-4,** respectively **0-** serial port **1,**1 **-** serial port 2**,2 - serial port 3,3 - network port,** 4**- net weight.**
	t5.3 Communication Indicators **1** Definition	Initial value: **0**; Range: **0-3**, which are **0-** serial port 1,1 **- serial port 2,2** - **serial port 3,3- network port**.
	t5.4 Communication Indicator **2** Definition	Initial value: **3**; Range: **0-3**, which are **0-** serial port 1,1 **- serial port 2,2** - **serial port 3,3 - network port**.
t6 Password Settings	**t6.1** Calibrate and reset password Settings	To set the password for entering the calibration parameters and resetting the parameters, enter the same password twice.
	t6.2 Parameter password protection switch	**ON** and **OFF** are optional. If you select **ON**, you need to enter the password when you enter the option to change the parameter value after it is enabled.
	t6.3 Parameter Password Settings	This parameter is valid if the parameter password is set to ON. Used to set the password for entering other parameters besides the calibration parameter and parameter reset. Enter the same password twice to change.
t7 MAC Settings	The **MAC** address of the instrument can be queried but cannot be modified. Initial value: **BC.66.41.90.35.56**	
t8 Meter Info	**t8.1** Meter Model	Display meter model number, default **GMT-H2**, model number can be customized,

		refer to Chapter 15 for details.
	t8.2 Meter **ID**	Display meter **ID**, default: **0000**, modifiable.
	t8.3 Attach Board **1** Info	Display add-on board information. **100**: No attachment board; **101:TCP** network port; **102:**PN**; 103:EIP; 104:EtherCAT.**

Chapter 11 Serial Communication

GMT-H2 is equipped with three serial ports, two **RS485 channels** and one **RS232** channels to realize communication with the upper computer.

The serial port supports **r-Cont** protocol, **r-SP1** protocol , **tt** Torrido protocol, **Cb920** protocol, **rECont** protocol, **rErEAD** protocol, **PT650D** protocol, **Yh** protocol, **WI-125** protocol (large screen protocol) and **Modbus** protocol **(bus)**.

See Section 2.5 for serial port terminals. The **baudrate,** communication protocol Settings and communication format are set to communication parameters N1.2, N1.3 and N1.4.

11.1 **r-Cont protocol**

Com-- **N1-- N1.3** Select **r-Cont** protocol. In this mode**, t**here is no need to send any command to the weight transmitter. The monitor automatically sends the collected data to the supreme computer.

Its data frame format:

STX	Scale number	Channel number	Status	Weight value	**CRC**	**CR**	**LF**

Among them:

STX -- **1** bit, start character, **02H**

Scale number -- **2** bits, range **01 to 99**

Channel number **-----** is fixe**d a**t 31

Status -- **2** bits, high byte: Fixed to **40H**; Low byte the individual bits are defined below

D7	**D6**	**D5**	**D4**	**D3**	**D2**	**D1**	**D0**
Undefined	Undefined	Undefined	Gross net weight	Plus /minus	Zero	Overflow	Stabilization
Fixed :**0**	Fixed :**1**	Fixed :**0**	**0:** gross	**0:** positive	**0:**	**0:** Normal	**0:** unstable

			weight **1:** net weight	**1:** negative	non-zero **1:** zero	**1:** Overflow	**1:** Stable

Weight value -- **6** digit unsigned number; Return "space space **OFL** space" when weight positive (negative) overflows

CRC -- **2-bit**, checksum

CR -- **1** bit, **0DH**

LF -- **1** bit, **0AH**

For example:

Current meter automatically returns data: **02 30 31 31 40 41 20 20 20 37 30 30 (take display weight) 32 34 0D 0A**

The current status of the meter is stable, the weight is positive, and the current weight is **700**.

11.2 **r-SP1 protocol**

Communication parameters **Com--N1--N1.3** Select **r-SP1** protocol. In this mode, the weighing display will send the current data to the supreme computer only when it receives the command.

Code: **ASCII**

Supported opcodes: **W**: write operation; **R:** read operation; **C**, calibration; **O**, zero.

11.2.1 Parameter code description table

Operations	Parameter code	Parameter name	Number of characters
R	**WT**	Read current status with weight	**8**
C	**ZY**	Have weights to mark the zero	
C	**ZN**	Zero point without weights	**6**
C	**GY**	Have weight gain calibrated	**6**
R	**AM**	Absolute	**7** characters**:**

		millivolts	**D6D5D4D3D2D1D0; D6:+; D5-D0: ASCII** code corresponding to 6 millivolts with a fixed decimal point of **4**
R	**RM**	Millivolts relative to zero	**7** characters: **D6D5D4D3D2D1D0 D6**: +/-; **D5-D0**: **ASCII** code corresponding to **6** millivolts, fixed with **4** decimal points
O	**CZ**	Clear zero operation command	

11.2.2 Error Code Description Sheet

In the communication mode, if the weight transmitter receives a data frame error, there will be an error code in the data frame sent to the upper computer. The error code is described as follows:

1: **CRC** check error

2: Operation code error

3: Parameter code error

4: Error writing data

5: The operation cannot be performed

6: The channel number is incorrect

Note: The default channel number for this monitor is: **1 (31H)**

11.2.3 Example Commands

11.2.3.1 Upper computer reads the current status of weight transmitter

Format of send command:

STX	Scale number	Channel number	**R**	**WT**	**CRC**	**CR**	**LF**

Meter response format after correct reception:

STX	Scale number	Channel number	**R**	**WT**	state	Display value	**CRC**	**CR**	**LF**

Meter error after receiving response format:

STX	Scale number	Channel number	**R**	**WT**	**E**	Error code	**CRC**	**CR**	**LF**

Among them:

STX -- **1** bit, start character, **02H**

R -- **1** bit, **52H**

WT -- **2** bits, **57H 54H**

E -- **1** bit, **45H**

Status -- **2** bits, high byte: Fixed at **40H**; Low byte the individual bits are defined below

D7	**D6**	**D5**	**D4**	**D3**	**D2**	**D1**	**D0**
Undefined	Undefined	Undefined	Gross net weight	Plus/minus	Zero	Overflow	Stabilization
Fixed **:0**	Fixed **:1**	Fixed **:0**	0**:** gross weight 1**:** net weight	**0:** positive **1:** negative	**0:** non-zero **1:** zero	**0:** Normal **1:** overflow	**0:** unstable **1:** Stable

Display value **- 6-digit** unsigned number, returned as "space space **OFL** space" when weight positive (negative) overflows

Error codes -- see **Section 11.2.2** (Error Code description table)

Example instructions:

The upper computer sends command: **02 30 31 31 52 57 54 30 31 0D 0A**

Correct response format: **02 30 31 31 52 57 54 40 41 30 30 33 37 35 33 33 36 0D 0A (Steady state,** current main value is 3753**)**

Incorrect response format: **02 30 31 31 52 57 54 45 31 31 39 0D 0A (CRC check error)**

11.2.3.2 Calibrating zero

1) Calibrate zero with current weight (calibrated with weights)

Send command format:

STX	Scale number	Channel number	**C**	**ZY**	**CRC**	**CR**	**LF**

Meter response format after correct reception:

STX	Scale number	Channel number	**C**	**ZY**	**O**	**K**	**CRC**	**CR**	**LF**

Meter error after receiving response format:

STX	Scale number	Channel number	**C**	**ZY**	**E**	Error code	CRC	**CR**	**LF**

Among them:

Z -- 1 bit**, 5AH**

Y -- 1 bit**, 59H**

For example:

The upper computer sends the command: **02 30 31 31 43 5A 59 39 34 0D 0A**

Correct response format: **02 30 31 31 43 5A 59 4F 4B 34 38 0D 0A**

Error response format: **02 30 31 34 43 5A 59 45 36 32 30 0D 0A** (channel number error)

2) Enter the millivolt calibration zero in the schedule (no weight calibration)

Send command format:

STX	Scale number	Channel number	**C**	**ZN**	Zero millivolts	**CRC**	**CR**	**LF**

Meter response format after correct reception:

STX	Scale number	Channel number	**C**	**ZN**	**O**	**K**	**CRC**	**CR**	**LF**

Meter error after receiving response format:

STX	Scale number	Channel number	**C**	**ZN**	**E**	Error code	**CRC**	**CR**	**LF**

Among them:

ZN - 2 places**, 5AH 4EH**

Zero millivolts - **6** digits, zero millivolts entered (**4** decimal places fixed)

Examples to illustrate:

The upper computer sends the command: **02 30 31 31 43 5A 4E 30 30 32 36 31 30 38 30 0D 0A**

Correct response format: **02 30 31 31 43 5A 4E 4F 4B 33 37 0D 0A**

Incorrect response format: **02 30 31 31 43 5A 4E 45 34 30 34 0D 0A** (Error writing data)

11.2.3.3 Gain calibration

1) Calibration with weights

Load a standard weight close to **80%** of the maximum range on the scale table (such as standard weight weight: **200**) and by this method write the weight of the standard weight to complete the gain calibration.

Format of send command:

STX	Scale number	Channel number	**C**	**GY**	Weight value	**CRC**	**CR**	**LF**

Meter response format after correct reception:

STX	Scale number	Channel number	**C**	**GY**	**O**	**K**	**CRC**	**CR**	**LF**

Meter error after receiving response format:

STX	Scale number	Channel number	**C**	**GY**	**E**	Error code	**CRC**	**CR**	**LF**

Among them:

GY - 2 bits**, 47H 59H**

Weight weight value -- **6** digits: The weight value of the standard weight written

For example:

The upper computer sends the following command: **02 30 31 3143 47 59 30 30 30 32 30 30 36 35 0D 0A (Write the** value: weight: 200**)**

Correct response format: **02 30 31 31 43 47 59 4F 4B 32 39 0D 0A**

Incorrect response format: **02 30 31 35 43 47 59 45 36 30 32 0D 0A** (channel number error)

11.2.3.4 ZeroClearing operation

Format of send command:

STX	Scale number	Channel number	**O**	**CZ**	**CRC**	**CR**	**LF**

Meter response format after correct reception:

STX	Scale number	Channel number	**O**	**CZ**	**O**	**K**	**CRC**	**CR**	**LF**

Meter error after receiving response format:

STX	Scale number	Channel number	**O**	**CZ**	**E**	Error code	**CRC**	**CR**	**LF**

For example:

The upper computer sends the command: **02 30 31 31 4F 43 5A 38 34 0D 0A**

Correct response format: **02 30 31 31 4F 43 5A 4F 4B 33 38 0D 0A**

Incorrect response format: **02 30 31 31 4F 43 5A 45 35 30 36 0D 0A** (Operation cannot be performed)

11.2.3.5 **CRC** calculation

All the values preceding the check bit are added and converted to decimal data, then the last two bits are converted to **ASCII** (tens place first, ones place second).

Illustrative,

If you have the following frame of data:

02	**30**	**31**	**31**	**4F**	**43**	**5A**	**38**	**34**	**0D**	**0A**

Add the sum from 02 to 5A: **180** (**Hex**), converted to decimal **384.** From this, it can be calculated that the check codes for this data frame are **38 and 34.**

11.3 **tt Toledo protocol**

Communication parameters **Com-- N1-- N1.3 If** tt **protocol is selected,**

the meter **will send data in Toledo protocol continuous mode.**

The format of Toledo continuous transmission is as follows:

1	2	3	4	5 6 7 8 9 10	11 12 13 14 15 16	17
STX	**A**	**B**	**C**	Show weight **6** bits	Six **30H** checksums	**0D**

Where: The starter is the standard **ASII** starter **02(STX)**

The status word **A** is defined as follows:

D0	**0**	**1**	**0**	**1**	**0**
D1	**1**	**1**	**0**	**0**	**1**
D2	**0**	**0**	**1**	**1**	**1**
Decimal point position	**x**	**.x**	**.xx**	**.xxx**	**.xxxx**

Where: **D3 D4 D6** is **0**(unchanged)**D5** is **1**(unchanged)

The status word **B** is defined as follows:

D6	D5	D4	D3	D2	D1	D0
Meter status			Steady state	Overflow state	Symbols	Gross/net weight status
0 fixed	**1** fixed	**1** fixed	**1:** Stability **0:** unstable	**1:** Overflow **0:** Normal	**1:** negative **0:** positive	0**:** gross weight 1**:** net weight

State **C** is standby state, temporarily useless, fixed output **20H**.

11.4 **Cb920 Protocol**

Com--N1--N1.3 Select Cb920. In this mode, no command needs to be sent to the meter. The meter will send data in Cb920 continuous mode.

The format of the data frame is as follows:

Status	,	Gross weight	**0/1**	Symbols	Display values	Units	CR	LF

Among them:

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

US(unstable**)** : **55H 53H**

, -- **1** bit, delimiter **2CH**

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

0/1 -- 1 bit**, (30H/31H)** alternately send.

Symbols **-- 1** bit**, 2BH (+), 2DH (--)**

Display value -- **7** digits, including decimal point: Take the meter display value

Unit -- **2** digits**, kg:6B 67; g:20 67 ; t:20 74; lb:6C 62 ;**

CR - **1** bit, **0DH**

LF -- **1** bit, **0AH**

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

53 54 2C 47 53 31 2B 20 20 31 39 30 2E 31 20 67 0D 0A

The current meter status is stable, gross weight, data value is positive, and current weight value is 190.1g.

11.5 **rECont protocol**

In this mode, there is no need to send any command to the weighing display, and the display automatically sends the collected data to the supreme machine.

Return data frame format description:

Status	,	**GS/NT**	,	+ / -	Display value	Units	**CR**	**LF**
2 bits	**2C**	**47 53/4E 54**	**2C**	**2B/2D**	**7** bits	**6B 67**	**0D**	**0A**

Where:

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

US(unstable):**55H 53H**

Display value **- 7** digits, including the decimal point, no decimal point for the high space

For example:

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

53 54 2C 47 53 2C 2B 30 31 31 2E 31 32 30 6B 67 0D 0A

You can see that the current status is stable, the data value is positive, and the display value is **11.120kg**

11.6 **rEREAD protocol**

The weighing display in this mode will only send the current data to the supreme machine when it receives the command. Format of data frame sent by the upper computer to the monitor:

Data	R	E	A	D	CR	LF
Instructions	52H	45H	41H	44H	0DH	0AH

Upper computer sends command: **52 45 41 44 0D 0A**

The data frame returned by instrument response is consistent with the data frame returned by **rECont** protocol, refer to **rECont** return data frame description.

Send clear command format: **ZERO ON<CR><LF>**

The upper computer sends the command **5A 45 52 4F 20 4F 4E 0D 0A**

Return **YES<CR><LF>** or **NO? <CR><LF>**

Send marked zero command format: **TARE ON<CR><LF>**

The upper computer sends command: **54 41 52 45 20 4F 4E 0D 0A**

Return **YES<CR><LF>** or **NO? <CR><LF>**

Send read **ID** number command format: **GET ID<CR><LF>**

The upper computer sends the command: **47 45 54 20 49 44 0D 0A**

Return the **ASCII** code as a **6-digit ID** number

11.7 **PT650D Protocol**

Communication parameters **Com--N1-- N1.3 When PT650D** protocol is **selected**, the data frame format (N1.4) is automatically adjusted to **7-E-1**

and the baud rate **(N1.2)** is automatically adjusted to **9600 (**and only 2400, **4800**, 9600 **and 19200** are optional).

In this protocol mode, the data is output in **ASCII** code, and the data format is as follows:

Return the data frame format description:

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	0	**L**	**,**	**N**	**T**	**,**	Sign	**1**	**2**	**3**	**4**	**.**	**5**	**7**	**k**	**g**	**CR**	**LF**

Among them:

No. **1,**2 **--** State 1: **OL(overflow)**:4F 4C**; ST(stable display**):53 **54**; **US(unstable** display**): 55 53**

No.3 -- ", "**2C** (**HEX**)

No. **4**,5 **--** State 2: **GS(gross weight)** : 47 **53**; **NT(net weight) : 4E** 54

No.6 -- ", "**2C** (**HEX**)

7 -- symbol: "+" (positive) : **2B**; "-" (negative) : **2D**

No.8-14 -- Weighing value: If there is No decimal point, output a space at **No.8**; The overflow state reads **999999**

No.15-16 -- Unit: **kg:6B 67; g:20 67 ; t:20 74; lb**:6C 62 ;

No.17-18 -- Control code: **CR: 0D**; **LF: 0A**

11.8 **Yh protocol**

Communication parameters **Com--N1--N1.3** When **Yh** protocol is **selected**, the **data** frame format (M1.4) is automatically **adjusted to 8-n-1** and the baud **rate (M1.2**) is automatically adjusted **to 1200.** The **communication** interval time **(M2.6)** is automatically adjusted to 50ms**.**

Under this protocol, data is output in **ASCII** code, and each frame data is composed of **9** groups (including the decimal point). Data transmission first low and then high, each frame data between a group is the separator "=", send data for the 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 digit is insufficient to fill **0**, the decimal point is **1** byte, and **Bit8** is a negative sign "-" when it is negative.

That is, return: **3D 39 2E 33 32 31 30 30**.

11.9 **WI-125** Protocol

Communication parameters **Com-- N1-- N1.3** When WI-125 is selected, the baud rate **(N1.2)** is automatically set to 9600 (and only 2400, 4800, 9600, and 19200 are optional). Mode, you do not need to send any command to the meter. The meter will send data in the following format.

Data frame format:

Starting character	State	Display weight value	Space	Units	Spaces	**CR**	**LF**

Among them:

Start character **-- 0x20**

Status -- **1** bit, **G (**gross weight**): 47H; N (**net weight**):4EH**

Display weight value - **8** digits, including plus or minus sign and decimal point, the first sign is plus or minus sign, plus sign is not displayed, positive number is **20H**; **-- : 2DH;**

Space -- **0x20**

Units -- **2** digits**, kg:6B 67; g:67 20; t: 74 20; lb:6C 62;**

CR - **1** bit, **0DH**

LF -- **1** bit, **0AH**

11.10 **Modbus** Protocol

11.10.1 **MODBUS** Function Code and Exception Code

Function code supported by instrument:

Function code	**Name**	**Instructions**
03	Read register	Up to **125** registers can be read at a time
06	Write a single register	Use this function code to write a single hold register.
16	Write multiple registers	This meter this command only supports writing to double registers, the address must be aligned when writing, only part of the double register is not allowed to be written, and read only part is allowed when reading.
01	Read coil	Note that this length is in bits
05	Write coil	

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

MODBUS Exception code responds

Code	**Name**	**Meaning**
02	Illegal data address	For the purposes of this meter, this error code means that the received data address is not allowed.
03	Illegal data values	The portion of data written and the allowable range.
04	Slave machine failure	An unrecoverable error occurs when the meter is attempting to perform the requested operation.
07	Unsuccessful programmin g request	For the meter, the command received cannot be executed under the current conditions.

11.10.2 **MODBUS Communication** Address

Functional address	**PLC** address	Meaning	Instructions	
The following is readable (read function code 0x03)				
0000-0001.	**40001-40002.**	Weight status	Weight currently displayed, signed, integer type	
0002	**40003**	Weight	bit	Instructions

		Status flag bit **1**	**D4-15**	Reserve, return **0**
			D3	Overflow state, (abnormal weight or sensor)
			D2	Show weight minus sign, (show weight as negative
			D1	Zero point (weight in the range of **0±1/4 d**)
			D0	Stable (sign of stability for weight judgment)
0003	**40004**	Reserved		
0004	**40005**	Error code Flag **1** **(**Alarm **2s** clears automatic-ally**)**	**D15**	Calibration error (prompt for calibration when unstable and overflow)
			D14	AD fault (clear fault alarm as needed)
			D13	Reserved
			D12	Remote calibration was performed when forbidden
			D11	Calibration in the switch input calibration lock is effective, under protection
			D10	The previous weight point is not calibrated
			D9	Exceeding minimum resolution (less than **0.01uV per** fraction)
			D8	Weight input exceeds maximum

				range
			D7	The weight input cannot be zero
			D6	The weight is calibrated to be less than zero or the previous standard point
			D5	Weight calibration sensor positive overflow
			D4	Negative sensor overflow during weight calibration
			D3	Weight calibration is unstable
			D2	Positive sensor overflow at zero calibration
			D1	Sensor negative overflow during zero calibration
			D0	Zero point calibration is unstable
0005	**40006**	Error Code Flag **2 (**Alarm **2s** clears automatic-ally**)**	**D12-D15**	Reserved
			D11	The net weight status does not allow peeling
			D10	Weight negative when peeling
			D9	Sensor is overflowing when peeling
			D8	Negative sensor overflow when peeling
			D7	Unstable when

				peeling
			D6	The net weight status cannot be cleared to zero
			D5	Sensor is overflowing when zeroing
			D4	Sensor negative overflow when zeroing
			D3	Unstable when zeroing
			D2	Clear out of range
			D1	Unstable on power-on reset
			D0	Power on clear zero out of range
0006	**40007**	Process status flag bit **1**	**D4-15**	Reserve, return **0**
			D3	Preset point **4** state
			D1	Preset point **3** state
			D1	Preset point **2** state
			D0	Preset point **1** state
0007-0009.	**40008-40010**	Reserved		
0010-0011.	**40011-40012**	Gross weight value (**4-byte** signed integer)		
0012-0013.	**40013-40014**	Net weight value (**4** bytes signed integer)		
0014-0015.	**40015-40016**	Tare value (**4** bytes signed integer		
0016-0017.	**40017-40018**	Display weight value (signed floating-point type)		
0018-0019.	**40019-40020**	Gross weight value (**4-byte** signed floating-point)		
0020-0021.	**40021-40022**	Net weight value (**4** bytes signed floating point)		
0022-0023.	**40023-40024**	Tare value (**4-byte** signed floating point)		
0024-0029.	**40025-40030**	Reserved		
0030-0031.	**40031-40032**	Analog output millivolts (not including millivolts for analog calibration state), **3** decimal points		

0032-0033.	**40033-40034**	Sensor absolute voltage value, integer, 4 decimal points	
0034-0035.	**40035-40036**	Relative zero voltage value, integer type, 4 decimal points	
0036-0037.	**40037-40038**	The filtered **AD** code is an integer ranging from **0 to 16777215**	
0038-0049.	**40039-40050**	Reserved	
Basic parameter area, the following is readable and writable (read function code 0x03, write function code 0x06)			
0050-0051.	**40051-40052**	PWR-On Zero Range	Initial value: **0** Range: **0 to 100% (full scale percentage)** **0:** disables the power-on reset function **1-100: indicates** that the system is powered on and zeroed out based on the maximum range of **1-100%** **101**: Restore the last zero point before turn off.
0052-0053.	**40053-40054**	TrZero Range	Initial value: **0**; Range: **0 to 99d**
0054-0055.	**40056-40057**	Zero Range	Initial value: **20;** Range: **0** to **99%** (full scale percentage)
0056-0057.	**40058-40059**	STAB Range	Initial value: **1**; Range: **0 to 99d, 0** indicates constant stability
0058-0059.	**40060-40061.**	Digital filter level	Initial value: **4**; Range: **0 to 9**
0060-0061.	**40062-40063**	Steady-state filtering	Initial value: **0**; Range: **0 to 99d**
0062-0063.	**40064-40065**	**AD** Sampling rate	Initial value: **4**; Range: **0** to **5**; Corresponding to **0:30 seconds/time,** **1:60 seconds/time,** **2:120 seconds/time,** **3:240 seconds/time,** **4:480 seconds/time,**

			5:960 seconds/time,
0064-0065.	**40066-40067**	Tare record function switch	Initial value: **0**; Range: **0: OFF**; **1: ON**
0066-0067	**40067-40068**	TrZero Time	Initial value:：**1000**；Range：**1~5000ms**
0068-0069	**40069-40070**	STAB Timer	Initial value:**1000**；Range：**1~5000ms**
0070-0071	**40071-40072**	Force Zero Threshold	Initial value:**1**；Range：**1~999999**
0072-0073	**40073-40074**	Force Zero Timer	Initial value:：**3**；Range：**1~20s**
0074-0075	**40075-40076**	Force Zero Switch	Initial value:**0**；Range：**0：OFF**；**1**：**ON**
0076-0099	**40077-40100**	Reserved	
Demarcate parameter area, the following is readable and writable (read function code 0x03, write function code 0x06)			
0100-0101	**40101-40102**	Units	Initial value: **1**; Range: **0:t, 1: kg, 2 g, 3: lb**
0102-0103	**40103-40104**	Decimal point	Initial value: **0:0**; Range: **0:0**; **1:0.0; 2:0.00**; **And 3:0** 000
0104-0105	**40105-40106**	Division,	Initial value: **1**; Range: **1/2/5/10/20/50d**
0106-0107	**40107-40108**	Maximum range	Initial value: **10000**; **The value** ranges **from 1 to 999999**
0108-0109	**40109-40110**	Automatic zero calibration	Write: **1** for zero calibration, automatically obtain sensor voltage calibration zero; Read: is the current sensor voltage value
0110-0111	**40112-40113**	Manual zero calibration	**0-150000(**4 **decimal** points), Write: Write voltage value as zero voltage; Read: for the **mV** number of the current zero)

0112-0113	**40114-40115**	CAL Point**1**	Write: write the weight value to the calibration weight point **1** calibration; Read: Get relative voltage value 1 when reading (sensor input - zero voltage)
0114-0115	**40116-40117**	CAL Point **2**	Write: write the weight value to the calibration weight point **2** calibration; Read: get the relative voltage value 2 when reading (sensor input - voltage at standard point 1)
0116-0117	**40118-40119**	CAL Point **3**	Write: write the weight value to the calibration weight point **3** calibration; Read: get the relative voltage value 2 when reading (sensor input - voltage at mark point 2)
0118-0119	**40120-40121**	CAL Point **4**	Write: write weight value to the calibration weight point **4** calibration; Read: get relative voltage value 2 when reading (sensor input - voltage at standard point 3)
0120-0121	**40121-40122**	CAL Point **5**	Write: Write the weight value to the calibration weight point **5** calibration, Read: get the relative voltage value 2 when reading (sensor input - voltage at point 4)
0122-0123	**40123-40124**	Sensor sensitivity	Write: Use the sensitivity value of the sensor; Read: Sensitivity value set last time (**4** decimal places)
0124-0125	**40125-40126**	Total Capacity range	Enter the sum of all sensor ranges

0126-0127	**40127-40128**	Use T-CAL	**0**: Turn off the theoretical weight function and use the calibration data **1**: Enable weight calculation using theoretical value
0128-0129	**40129-40130**	Calibration correction coefficient	Write coefficient to correct the calibration, fixed **5** decimal places
0130-0149.	**40131-40150.**	Reserved	
Apply parameter area, the following is readable and writable (read function code 0x03, write function code 0x06)			
0150-0151	**40151-40152**	Input**1** function	Parameters range: **0-11**, **0-** None, 1- SP1; 2- SP 2; 3- SP3; 4- SP4; 5- Clear zero; 6- Parameter reset; 7- Tare/Clear Tare; 8- Tare; 9- Clear Tare; 10- **Calibration** lock; 11- **Print**; 12- **Gross/ Net** weight switch; Initial value: **0**
0152-0153	**40153-40154**	Input **2** Function	
0154-0155	**40155-40156**	Input **3** Function	
0156-0157	**40157-40158**	Input **4** Function	
0157-0169	**40158-40170**	Reserved	
0170-0171	**40171-40172**	Output **1** Function	Parameters range: **0-6**, corresponding to: **0**- None; **1**- SP1; **2**- SP 2; **3**- SP3; **4**- SP4; **5**- Stable; **6**- Overflow; Initial value: **0**
0172-0173	**40173-40174**	Output **2** Function	
0174-0175	**40175-40176**	Output **3** Function	
0176-0177	**40177-40178**	Output **4** Function	
0178-0179	**40179-40180**	Output **5** Function	
0180-0181	**40181-40182**	Output **6** Function	
0182-0189	**40183-4090**	Reserved	
0190-0191	**40191-40192**	SP**1** Whether to call steady	Whether to judge the weight stability, parameter range: **0:OFF**, no need to

			judge the stability; **1:ON,** need to judge the stability; Initial value: **0:OFF**
0192-0193	**40193-40194**	SP**1** Minimum duration	Parameter range: **0-999** (unit **0.1s**); Initial value: **0.**2s
0194-0195	**40195-40196**	SP**1** Valid condition	Parameters range**: 0-9**, 0- off, 1- weight less than, 2- weight less than or equal to, 3- weight equal to, 4- weight greater than or equal to, 5- weight greater than, 6- weight not equal to, 7- weight not between, 8- weight between, 9- external trigger; Initial value: 1
0196-0177	**40197-40198**	SP**1** Set value 1	Compare value **1**, signed number, range **-99999-999999**; Initial value: **0**
0198-0199	**40199-40200**	SP**1** sets the value 2	Compare value **2**, signed number, range **-99999-999999**, initial value: **0**; Used when two comparison values are needed, this value is greater than the comparison value of 1
0200-0209	**40201-40219**	Reserved	

0210-0211	**40211-40212**	SP**2** Whether to call steady	Refer **to the PLC** address 40191-40200 **Preset point** 1 function **description**
0212-0213	**40213-40214**	SP**2** Minimum duration	
0214-0215	**40215-40216**	SP**2** Valid condition	
0216-0217	**40217-40218**	SP**2** Set value 1	
0218-0219	**40219-40220**	SP**2** Set value 2	
0220-0229	**40221-40230**	Reserved	
0230-0231	**40231-40232**	SP**3** Whether to call steady	Refer to the **PLC** address **40191-40200** Preset point 1 function **description**
0232-0233	**40233-40234**	SP**3** minimum duration	
0234-0235	**40235-40236**	SP**3** Valid condition	
0236-0237	**40237-40238**	SP**3** Set value 1	
0238-0239	**40239-40240**	SP**3** Set value 2	
0240-0249	**40241-40250**	Reserved	
0250-0251	**40251-40252**	SP**4** Whether to call steady	Refer to the **PLC** address **40191-40200** Preset Point 1 function **description**
0252-0253	**40253-40254**	SP **4** minimum duration	
0254-0255	**40255-40256**	SP**4** Valid condition	
0256-0257	**40257-40258**	SP**4** Set value 1	
0258-0259	**40259-40260**	SP**4** Set value 2	
0260-0299	**40261-40300**	Reserved	
Communication parameter setting area, the following contents are readable and writable (read function code 0x03, write function code 0x06)			
0300-0301.	**40301-40302**	RS485_1 **Slave ID**	Slave number of serial port **0**; Range: **01-99**
0302-0303.	**40303-40304**	**RS485_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**;
0304-0305.	**40305-40306**	**RS485_1**	Initial value: 0-

		Communication Protocol	Modbus **RTU,** range: 0-Modbus **RTU,** 1-r-Cont**,** 2-r-SP1**,** 3-tt**, 4-Cb920,** 5-rE-Cont**, 6-rE-rEAd, 7-Pt650D, 8-YH, 9-Print**(print)**, 10-WI-125**
0306-0307.	**40307-40308**	**RS485_1** data format	Initial value: **1 (8E1)**; Range: **0-8N1**, **1-8E1**, **2-8O1**, **3-7E1**, **4-7O1**
0308-0309.	**40309-40310**	**RS485_1** double word mode	Initial value :**0** (**AB-CD**) Range :**0 :**AB-CD**, 1:**CD-AB.
0310-0311.	**40311-40312**	**RS485_1** Continuous send interval	Initial value: **20ms**, range: **0-1000ms**
0312-0313.	**40313-40314**	Tollido Protocol whether to send checksums	Initial value: **0**, range: **0:OFF**, do not send, **1:ON**, send
0314-0319.	**40315-40320**	Reservations	
0320-0321.	**40321-40322**	RS485_2 Slave ID	Refer **to RS485_1** parameters
0322-0323.	**40323-40324**	**RS485_2** baud rate	
0324-0325.	**40325-40326**	**RS485_2** Communication Protocol	
0326-0327.	**40327-40328**	**RS485_2** data format	
0328-0329.	**40329-40330**	**RS485_2** double word mode	
0330-0331.	**40331-40332**	**RS485_2** Continuous Send interval	

0332-0333.	**40333-40334**	Tollido Protocol whether to send checksums	
0334-0339.	**40335-40340**	Reservations	
0340-0341.	**40341-40342**	RS232 Slave ID	Refer **to RS485_1** parameters
0342-0343.	**40343-40344**	**RS232** baud rate	
0344-0345.	**40345-40346**	**RS232** Communication Protocol	
0346-0347.	**40347-40348**	**RS232** data format	
0348-0349.	**40349-40350**	**RS232** double word mode	
0350-0351.	**40351-40352**	**RS232** Continuous send interval	
0352-0353.	**40353-40354**	Tollido protocol whether to send checksums	
0354-0359.	**40355-40360**	reserve	
0360-0361.	**40361-40362**	Network port communication mode	**The** protocols are 0: **Modbus/TCP, 1: GM-Cont/TCP**
0362-0363.	**40363-40364**	Network port double word mode	For standard network ports: **0-AB-CD**, **1-CD-AB** This parameter can be set when the communication mode is **0:**

			Modbus/TCP
0364-0365.	**40365-40366**	Network port sending interval	For standard network ports, you can set: Communication mode**: 1: GM-Cont/TCP**. This parameter is used to set the interval for continuous transmission. Initial value: **20ms**, range **0-1000ms**
0366-0367.	**40367-40368**	Port Indicates the local port number	Initial value: **502**, range: **0-65535**, set the network communication port number
0368-0375.	**40369-40376**	Network port local **IP** segment	Initial value: **192.168.000.100, part 1** to Part 4 IP **in order**
0376-0377.	**40377-40378**	Data Type	Range: **0-2, 0-int wt-** integer weight**, 1-flo wt-** floating point weight; Default: **1**
0378-0379.	**40379-40380**	Write switch	**0-OFF, 1-**ON
0380-0389.	**40381-40390**	reserve	
0390-0391.	**40391-40392**	Print language	Range: **0**: **CHn-** Chinese **1**: **En-** English; Initial value: **En-** English

0392-0393.	**40393-40394**	Print Content	Initial value: **0-** shows weight; Range: **0-6**, optional: **0-** Show weight, **1-** gross weight, **2-** net weight, **3-** Net weight + tare (two rows), **4-** Gross weight + Net weight + Tare) (three rows)
0394-0395.	**40395-40396**	Print interval	Range: **0-99**, number of lines per print interval; Initial value: **2**
0396-0399.	**40397-40400**	Reservations	
Analog calibration area address, readable and written (read function code 0x03, write function code 0x06)			
0400-0401.	**40401-40402**	Enter/exit analog quantity calibration	Range: **0-2**, write: **0:** exit remote analog calibration state; **1**: remote current calibration; **2**: remote voltage calibration.
0402-0403.	**40403-40404**	Current marker Point **1** digital code	Digital code range: **0-65535**, write: Output current in real time according to DA code written. Available only in current calibration
0404-0405.	**40405-40406**	Current marker point **1** current value	
0406-0407.	**40407-40408**	Current marker Point **2** digit code	

0408-0409.	**40409-40410**	Current marker point **2** current value	mode. Current value range: **0** **24000**, write the measured current valu (need to write **DA** coc first, otherwise cannot be written), complete the current calibration of the corresponding point, then **DA** code and current value take effect at the same time Available only in current calibration mode.
0410-0411.	**40411-40412**	Current marker Point **3** digit code	
0412-0413.	**40413-40414**	Current marker point **3** current value	
0414-0415.	**40415-40416.**	Current marker Point **4** digit code	
0416-0417.	**40417-40418.**	Current marker point **4** current value	
0418-0419.	**40419-40420.**	Current marker point **5** digit code	
0420-0421.	**40421-40422.**	Current mark point **5** current value	
0422-0423.	**40423-40424.**	Voltage marker point **1** digit code	Range: **0-65535**, Write: Output voltage in real time according to DA code written. Available only in voltage calibration mode. Range: **0-10000**, write the measured voltage value (need to write DA code first, otherwise
0424-0425.	**40425-40426.**	Voltage Mark point **1** Voltage value	
0426-0427.	**40427-40428.**	Voltage marker point **2** digit code	
0428-0429.	**40429-40430.**	Voltage mark point **2** voltage value	
0430-0431.	**40431-40432.**	Voltage marker point **3** digit code	
0432-0433.	**40433-40434.**	Voltage mark point **3** Voltage value	

0434-0435.	**40435-40436.**	Voltage marker point **4** digit code	cannot be written), complete the voltage calibration of the corresponding point. Available only in voltage calibration mode.
0436-0437.	**40437-40438.**	Voltage mark point **4** voltage value	
0438-0439.	**40439-40440.**	Voltage marker point **5** digit code	
0440-0441.	**40441-40442.**	Voltage mark point **5** voltage value	
0442-0459.	**40443-40460.**	Reservations	
0460-0461.	**40461-40462.**	Analog Type**,**	Initial value: **0**; Range: **0:4-20mA**; **1:0-10V**; 2: **user** defined current; 3: **user-defined** voltage
0462-0463.	**40463-40464.**	Analog quantity minimum current/voltage	Range **0-10000** or **0-24000**, default **0**. Valid for user defined current/voltage, otherwise the read is all **0**, and the write is invalid
0464-0465.	**40465-40466.**	Zone Zero current/voltage	Range **0-10000** or **0-24000**, initial value **0**. Valid for user defined current/voltage, both reads are **0**, write is invalid

0466-0467.	**40467-40468.**	Range current/voltage	Range **0-10000** or **0-24000**, initial value: **24000/10000**. Valid for user defined current/voltage, all reads are **0**, write is invalid
0468-0469.	**40469-40470.**	Maximum flow/voltage analog output	Range: **0-10000** or **0-24000**, initial value: **24000/10000**. Valid for user defined current/voltage, all reads are **0**, write is invalid
0470-0499.	**40471-40500.**	Reserve	
Function operation class address area (corresponding coil function), read-write (read function code: 0x03; Write function code: 0x06)			
0500-0501.	**40501-40502.**	Mark zero	Write **1** Perform the corresponding operation Read all zeros
0502-0503.	**40503-40504.**	Zeroing	
0504-0505.	**40505-40506.**	Tare	
0506-0507.	**40507-40508.**	Clear Tare	
0508-0509.	**40509-40510.**	Gross/net weight switch	
0510-0511.	**40511-40512.**	print	
0512-0519.	**40513-40520.**	Reserve	
0520-0521.	**40521-40522.**	Reset all parameters	Write **1** Perform the corresponding reset
0522-0523.	**40523-40524.**	Calibration parameter	

		reset	operation Read all zeros
0524-0525.	**40525-40526.**	Apply parameter reset (in addition to calibration parameters)	
0526-0529.	**40527-40530.**	Reservations	
0530-0531.	**40531-40532.**	Show the backlight level	Parameters range: **0-2, 0-low, 1-mid, 2-high,** Default: **1**
0532-0533.	**40533-40534.**	Net Weight Indicator Light definition (Definable communication)	Parameter range: **0-4**, **0-serial port** 1, **1-serial** port 2, **2-serial port** 3, **3-network** port, 4-**Net** weight, Default value: 4
0534-0535.	**40535-40536.**	Communication Indicator Light **1** Define	Parameters: 0-3**. 0:** serial port 1,1**:** serial port 2,**2**: **serial port** 3,3: **network port. Default value: 0**
0536-0537.	**40537-40538.**	Communication Indicator Light **2** Define	Parameters: 0-3**. 0:** serial port 1,1**:** serial port 2,**2**: **serial port** 3,**3**: **network port. Default value: 3**
0538-0539.	**40539-40540.**	Reservations	
I/O test parameters, (523x) Remote test switch can read and write when turned on, otherwise read only			

0540-0541.	**40541-40542.**	**I/O** test switch	Parameter range: **0-1**, 0**:** exit I/O **test** mode, 1: **enter** serial port IO test **mode**, after the end of the test must be closed, the instrument can enter the normal state.
0542-0543.	**40543-40544.**	Input**1** Test	Reading **0** means no input, and reading **1** means there is input. Writing any value is invalid, (only valid in **IO** test mode)
0544-0545.	**40545-40546.**	Input **2** Test	
0546-0547.	**40547-40548.**	Input **3** Test	
0548-0549.	**40549-40550.**	Input **4** Test	
0550-0559.	**40551-40560.**	Reservations	
0560-0561.	**40561-40562.**	Output **1** Test	Range: **0-1**, write: **0**: off output, **1**: On output (valid only in **IO** test mode), read: current **IO** port status, **0**: off, **1**: on
0562-0563.	**40563-40564.**	Output **2** Test	
0564-0565.	**40565-40566.**	Output **3** Tests	
0566-0567.	**40567-40568.**	Output **4** Tests	
0568-0569.	**40569-40570.**	Output **5** Tests	
0570-0571.	**40571-40572.**	Output **6** Tests	
0572-0599.	**40573-40600.**	reserve	
Instrument system information area, read only area			
10000	**410001**	Software version (high word)	
10001	**410002**	Software version (low word)	If read **10000**, it is **01.00.00 version**
10002	**410003**	Compile time (years)	

10003	**410004**	Compile time (month day)	
10004-10016.	**410005-410017.**	Meter serial number **13** characters	
10017-10028.	**410018-410029.**	Meter code **12** characters	
10029	**410030**	Reserved	
10030-10035.	**410030-410036.**	Meter model character **6** characters, **GMT-H2**	
10036-10099.	**410037-410100.**	Reserved	
10100-10105.	**410101-410106.**	The meter's **MAC** six-segment address,	
10106-10119.	**410107-410120.**	Reserve	
10120	**410121**	Attach Board **01** Info	
10121	**410122**	Calibration parameter remote editing	
10122	**410123**	Remote editing of communication parameters (except calibration parameters)	
10123-10199.	**410124-410200.**	Reserve	
Coil address			
0000	**00001**	Mark zero	The contents are readable and writable coils, Write **ON** to perform corresponding operations Read all zeros
0001	**00002**	Zeroing	
0002	**00003**	Tare	
0003	**00004**	Clear Tare	
0004	**00005**	Gross/net weight switch	
0005	**00006**	Print	
0006-0009.	**00003-00010.**	Reserved	
0010	**00011**	Reset all parameters	This area is written only
0011	**00012**	Calibration parameter	

		reset	Write **ON** to perform the reset operation Read all zeros
0012	**00013**	Apply parameter reset (in addition to calibration parameters)	
0013-0019.	**00014-00020.**	Reservations	
0020	**00021**	Input **1** status	Read-only area Returns each input port status bit **0**: invalid; **1** valid
0021	**00022**	Input **2** status	
0022	**00023**	Input **3** status	
0023	**00024**	Input **4** Status	
0024-0029.	**00025-00030.**	Reservations	
0030	**00031**	Output **1** status	Read-only area Return each outlet status bit **0**: invalid; **1** valid
0031	**00032**	Output **2** status	
0032	**00033**	Output **3** status	
0033	**00034**	Output **4** status	
0034	**00035**	Output **5** status	
0035	**00036**	Output **6** status	
0036-0039.	**00037-00040.**	Reservations	
0040	**00041**	SP**1** status	Read only parameter area, Returns each outlet status bit **0**: invalid; **1** valid
0041	**00042**	SP**2** state	
0042	**00043**	SP**3** status	
0043	**00044**	SP**4** status	
0044-0049.	**00045-00050.**	Reservations	
0050	**00051**	Calibrate parameter	Read-only, whether

		remote editing	to allow remote editing, **1:** on, **0:** off
0051	**00052**	Remote editing of communication parameters (except for calibration parameters)	
0052-0049.	**00053-00060.**	Reservations	

Chapter 12 Network Port Communication

GMT-H2 is configured with a network communication interface, which is connected with the **RJ-45** crystal head to realize the communication with the upper computer or **PLC**.

If **Modbus/TCP** is used, the **IP** addresses of network ports must be set in communication parameters **N4.5** to N4.8. If the **IP** address of the network port **is 192.168.101.106**, input **192** for N4.5, **168** for **N4.6**, **101** for **N4.7**, and 106 for **N4.8;** The **port number** is **entered in N4.4**.

If the green indicator on the network port slot is steady on, the network cable is connected properly. If the orange indicator is blinking, the network adapter is receiving network data. If the indicator is set to network port in **SYS--t5.2** to **t5.4** system parameters. **NET/ COM**1 on the front panel of the meter when **Modbus** network port communication is performed
If the **/COM2** indicator blinks, **Modbus/TCP** communication is normal. However, when **Modbus** communication is interrupted, the **NET/ COM1/COM2 indicator** is off.

See Chapter 11.10.2 Modbus Communication Address Table for **the address table.**

Chapter 13 Bus Communications

13.1 PROFINET Communication

The GMT-H2 display has two **Profinet-IO** bus connection ports**, Port1** and **Port2,** which can be connected to the PROFINET bus from the station **as a** Profinet-IO**.**

The instrument **IP address** can be set and viewed in communication parameters **COM--N4--N4.5~N4.8; The MAC address can be viewed in system** parameter **SYS--t7.**

13.1.1 IO Status

GMT-H2 provides **14-byte Input**, **14-byte Output** in two modules, through which the master station can **read and** control the state of the weighing display.

13.1.1.1 Lite version Parameter address

PN Loop parameter list

Offset	Parameter name	Data type	Parameter description
Weight, millivolts, and status parameters (Read only, I **address)**			
0	Current display weight	**DWord**	Weight currently displayed, data type displayed according to the data type selected by **N4.10**. **Int: integer weight display; Float: floating point weight display;**
4	Weight status flag bit	**Word**	**D15:** Heartbeat packet display**, switching** between 0 and 1 at **1 Hz** frequency
			D14: Write status, 0**: no** error, 1**: write error**
			D13: calibration status**, 0:** normal**, 1:** calibration failure

			D8-D12: Reserved
			D7: Error6 alarm status (current weight display is unstable when peeling)**,0 is invalid,** 1 **is valid**
			D6: Error3 alarm state (when clearing zero, the current weight display is unstable),0 is invalid**, 1 is valid**
			D5: Error2 alarm state (when clearing zero, the current weight is out of the range of clearing zero),0 is invalid**, 1 is valid**
			D4: Gross/net weight status, 0 gross weight, 1 net weight
			D3: The sign of the value shown by the weighing display, 0 positive, 1 negative
			D2: zero state of weighing display, 0 non-zero, 1 zero
			D1: weighing monitor overflow state, 0 normal, 1 overflow
			D0: The weighing monitor is in stable state, 0 is stable, 1 is unstable
6	Millivolts for the sensor	**Float**	**4** bytes sensor millivolt data to read absolute millivolts
10	Read out value	**Dword**	The master station requests the data returned by the meter, the value obtained according to the "request read address".
Function operation (write, **Q** address only)			
0	Function operation	**Byte1**	**D0-D7:** Reserved
		Byte0	**D5-D7:** Reserved
			D4: Mark zero
			D3: Gross net weight switch

			D2: Skin clearing
			D1: Remove the skin
			D0: Clear
2	The request to write value of the modbus address	DWord	Write value address. This parameter modify connect port module support MODBUS address range limit **51 to 300**. 0:No write data.
6	Input value	DWord	Input value to the request to write value of the modbus address
10	The read request of the modbus address	DWord	Read address（Note: Can't read **DWord** address,when write an odd address） This PARA modify connect port module support

PN acyclic parameter list

Parameter name	Parameter description
PWR-On Zero Range	Range setting for power-on zeroing **0**: Disables the power-on automatic zeroclearing function **1-100**: Power on. Clear zero based on the maximum range 1-100%. **101:** Restore the last zero before the key
TrZero Range	Range: **0-99;** Initial value: **0**
Zero Range	Range: **0-99**; Initial value: **20**
STAB Range	Range: **0-99;** Initial value: 1
Digital filter level	Range: **0-9**; Initial value: **4**
Steady-state filtering level	Range: **0-9**; Initial value: **0**
AD sampling rat	Range: **0-5**; Initial value: **4**
Tare record function switch	Range: **OFF, ON**; Initial value**: OFF**
Units	Range: **t, kg, g, lb**; Initial value: **kg**
Decimal point	Range: **0-4**; Initial value: **0**

Minimum indexing value	Range: **1, 2, 5, 10, 20, 50**; Initial value: **1**
Maximum range	Range: **1**- min indexing ***999999**; Initial value: **10000**

13.1.2 Device Description file **GSD**

The device description file and connection method of GMT-H2 can be downloaded from the website of Shenzhen Germain Technology Co., LTD**.** (**www.szgmt.com**).

13.2 **EtherNet-IP Communication**

The IP address of the instrument can be set and viewed in the communication parameters **COM--N4--N4.5~N4.8**. The setting takes effect only after being powered on again. MAC address can be viewed in **SYS--t7** system parameter.

13.2.1 IO Status

GMT-H2 Lite provides a **7-byte INPUT, 7-byte OUTPUT** from **which the master station can** read and control the state of the weigh **display**.

13.2.1.1 Parameter address of the Compact version

EIP loop parameter list

Offset	Parameter name	Data type	Parameter description
0	Current display weight	**DWord**	Weight currently displayed, data type displayed according to the data type selected by N4.10. **Int:** integer weight display; **Float:** floating point weight display;
2	Weight Status flag bit (Read only)	**Word**	**D15:** Heartbeat packet display**, switching** between 0 and 1 at **1 Hz** frequency
			D14: Write status, 0**: no** error, 1**:**

			write error
			D13: calibration status**, 0:** normal**, 1:** calibration failure
			D8-D12: Reserved
			D7: Error6 alarm status (current weight display is unstable when peeling),0 is invalid, 1 is valid
			D6: Error3 alarm state (when clearing zero, the current weight display is unstable),0 is invalid, 1 is valid
			D5: Error2 alarm state (when clearing zero, the current weight is out of the range of clearing zero),0 is invalid, 1 is valid
			D4: Gross weight/net weight status, **0** gross weight, **1** net weight
			D3: The sign of the value shown by the weighing display**,** 0 positive**, 1** negative
			D2: Zero state of weighing display**, 0** non-zero**, 1** zero
			D1: weighing monitor overflow state**, 0** normal**, 1** overflow
			D0: The weighing monitor is in stable state**, 0 is** stable**, 1** is unstable
3	Millivolts for the sensor	**Float**	**4** bytes sensor millivolt data to read absolute millivolts
5	Read out values	**Dword**	The master station requests the data returned by the meter, the value obtained according to the "request read address".
Function operation (write, **Q** address only)			

0	Function operation	**Byte1**	**D0-D7:** Reserved
		Byte0	**D5-D7:** Reserved
			D4: Mark zero
			D3: Gross net weight switch
			D2: Skin clearing
			D1: Remove the skin
			D0: Clear
1	The request to write value of the modbus address	**DWord**	Write value address. This parameter modify connect port module support MODBUS address range limit 51 to 300. 0:No write data.
3	Input value	**DWord**	Input value to the request to write value of the modbus address
5	The read request of the modbus address	**DWord**	Read address （Note: Can't read DWord address,when write an odd address） This parameter modify connect port module support

Note: The EIP acyclic parameter can refer to the acyclic parameter list of PN

13.2.2 **EDS** Device description file

The Equipment description document and connection methods for GMT-H2 can be downloaded from the website of Shenzhen Geman Technology Co., LTD**.** (**www.szgmt.com**).

Chapter 14 Error and Alarm Information

Error Data or options or password Settings are incorrect, check the corresponding parameter input range.

Error1 Net weight does not allow zero clearing

Error2 When Zeroing, the current weight is out of the clear range.

Error3 When Zeroing, the current weight display (system) is unstable.

Error4 Enter the wrong password **three** times.

Error5 Current weight overflow when peeling.

Error6 When Tare ,The current weight display (system) is unstable.

Error7 Defines the calibration lock, wait for this signal to be valid.

Error8 When Tare , the weight is negative

Error9 The net weight status does not allow peeling.

OFL Weight positive overflow.

-OFL Weight negative overflow.

ADERR The AD is faulty.

UNDER Negative sensor overflow.

OVER Positive sensor overflow.

Chapter 15 Meter Models Custom Features

After the instrument is powered on, the instrument custom model is displayed. By performing related operations on the meter, you can customize the model content displayed on the meter. The steps are as follows:

1. After power on, press the key [→ MENU] **8** times in the main display interface, the instrument will display **SYS**, press the key, enter [Wt/AO ENTER ↵] to **t1 parameter**, combine the key [→ MENU] and [TARE OPTION ↑] enter the t8.1 display instrument model, in the current interface, press the button [→ MENU] for bit selection, press the key [TARE OPTION ↑] to adjust a character value, press the key [Wt/AO ENTER ↵] to save after the change, the instrument will display the changed model when startup; If no modification is made to the instrument model, the instrument will default to GMT-H2 **(Note: Instrument model will not be reset)**.

2. After entering the model customization screen, you can customize the 6-bit main display characters. You can select a certain character by using **t**he MODE key. The OPTION key can be used to adjust the characters, the sequence of character change is **space, -, 0~9, A~Z** (according to the display character comparison table, as shown in the appendix) **the 38** characters, press **Enter** key to save the current modified value.

Display the character comparison table:

a	b	c	d	e	f	g	h	i	j	k	l	m
												
n	o	p	q	r	s	t	u	v	w	x	y	z
												

Chapter 16 Product Dimensions