GMT-H1

User's Manual

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 Warning	The product adopts AC220V power supply.
	Please keep the instrument well grounded.
	The product is an electrostatic sensitive device. Take esd preventive measures during use and maintenance

Standards & Certification	Product standard: GB/T 7724-2008 Verification regulation: JJG 669-2016 CMC Accuracy Class 3; Guangdong 0000000048; Safety certification: CE

Content

Chapter 1 Overview

1.1 Functions and features

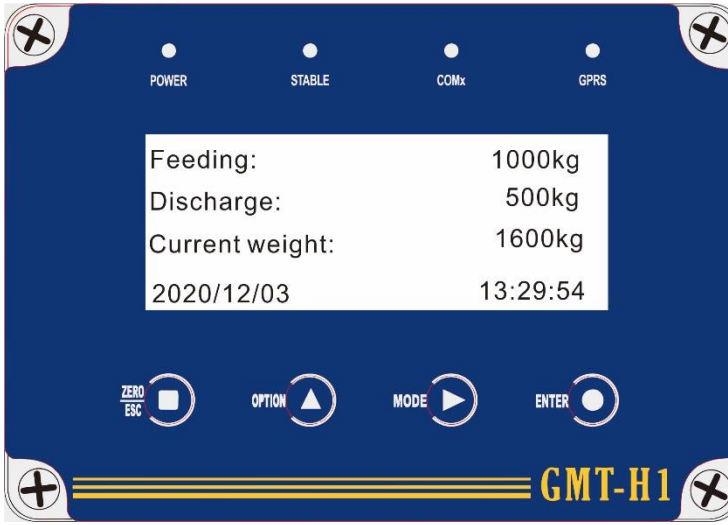
Shell type	Suspension, waterproof housing
Load cell interface	1 channel 6-wire analog load cell weighing platform interface, connect up to 8 350Ωload cells at most.
	1 digital sensor platform interface, connecting up to 8 sensors (hot swappable not allowed)
Display	LCD Display Screen
Interface	1 channel 485 port (standard configuration);Supports Modbus-RTU and automatic sending protocols.
	1 RJ45 port(standard configuration);Supports Modbus/TCP and automatic sending protocols
	GPRS data transmission function
	Fixed I/O: 3 in and 3 out(Note: IO function is temporarily unavailable)
	Variable IO: 3-way interface (can be customized for output/input function)
Weight calibration and calculation	Calculate the weight data by collecting the load cell, support the theoretical value calibration and weight calibration of two ways
Material level instrument function	Input scan through IO port to obtain material level information

1.2 Technical Specifications

Power supply	AC90-260 V50Hz (or 60 Hz) plus or minus 2%
Shell size	175*150*75mm
Product weight	750g
Authentication Environment	- 10 ~ 40 ℃;90% R.H without dew
Operating environment	- 20 ~ 60 ℃;90% R.H without dew
Storage	- 40 ~ 60 ℃;90% R.H without dew

environment	
Power consumption	10W
Excitation voltage of Weighing platform	5V 200mA(MAX)
Weighing platform requirements	1 analog platform interface, connect up to 8 350Ω load cells, support 1mV/V, 2mV/V, 3mV/V sensitivity
Sensitivity/Certified sensitivity	0.1 uV/d, 0.5 uV/ d
Non-linearity	0.01% F.S
A/D conversion speed	Default value: 100 times/second (optional)
Maximum display accuracy	1/100000
Keys	4 key audible mechanical keys
Decimal position	0, 0.0, 0.00, 0.000; Four kinds of optional

1.3 Panel Diagram



Status Indicator Light:

POWER: Power indicator.

STABLE: Stability indicator. When the weighing platform or hopper material weight change in the stable range, the indicator light.

COMx: Communication indicator;

GPRS: GPRS communication indicator light;

Keyboard：

: Zero/Esc key to exit the current operation/return to the previous menu key. Long press to zero (meet the conditions for zeroing).

: Parameters selection key. When the main display flashes, press this button to add 1 to the flashing position. If the flashing position is 9, press this button to add 1 to the data.

: Parameters setting function selection key. During data input operation, the main display flashing digit flashes. Press this key to move the flashing digit to the right. If the current flashing digit is the last digit, press this key to move the flashing digit to the leftmost digit.

: Confirm key, confirm to enter the current option during calibration or parameters setting; Confirm the entered data and end the operation.

Main interface switch key: Power on, the default display is the

incoming and outgoing material content, press 

,It can switch to display the accumulative content of material in and out on the same day.

The main interface displays: If one digital module is offline, the main interface will flash repeatedly to display "Module is offline"; if two or more digital modules are offline or the number of modules under the digital menu is 0, the main interface will flash repeatedly. "System failure!" is displayed. Digital module sensor conditions can be detected through prompts.

Chapter 2 Installation and Wiring

2.1 Connecting Power cables to the controller

The packaging controller uses 220V, 50Hz AC power supply with protective ground. The connection is as shown below:

Power terminal diagram

L-Live line

G-Ground line

N-Neutral line

2.2 Loadcell Connection

2.2.1 Connect Analog Loadcell

Gmt-H1 module shall be externally connected with resistance strain bridge loadcell, and the loadcell shall be connected to the module as shown below. When a four-wire loadcell is selected, the SN+ and EX+ of the module must be short-circuited, and the SN- and EX- must be short-circuited. Each port of the loadcell connection terminal is assigned to:

Port	**EX+**	**SN+**	**EX-**	**SN-**	**SIG+**	**SIG-**	**SHLD**
6 wire	Power positive	Loadcell positive	Power negative	loadcell negative	signal positive	Signal negative	Shielding wire
4 wire	positive		negative		signal positive	Signal negative	Shielding wire

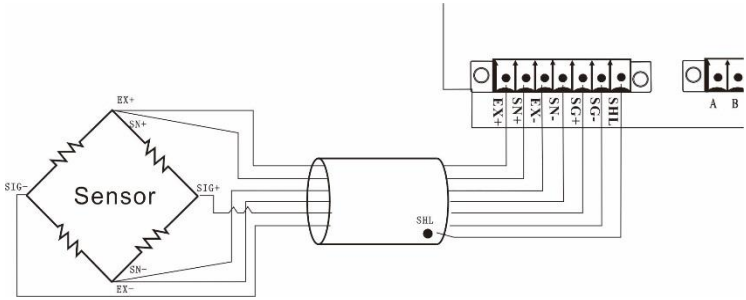
Notice:

1.Because the loadcell output signal is more sensitive to electronic noise analog signal, so loadcell wiring should be shielded cable, and laid separately with other cables, especially away from the AC power supply;

2.For the transmission distance is short and the temperature change is not large occasions or precision requirements are not high occasions can choose the four-wire loadcell; But for the application of long transmission distance or high precision requirements should choose

the six-wire loadcell;

3.When multiple loadcells are connected in parallel, ensure that the sensitivity (mV/V) of each loadcell is the same.



2.2.2 Connect Digital Loadcell

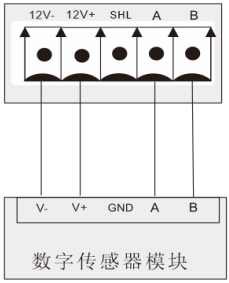
Connect the digital module sensor and the digital sensor interface of the instrument as shown in the figure.

1. Connect the A and B terminals of the digital module to the corresponding A and B terminals of the instrument.

2. Connect the V+ and V- of the digital module to the 12V and -12V of the instrument.

3. GND is a shielded wire

Note: After completing the wiring, please check whether the line sequence is correct. Wrong wiring may cause damage to the sensor module.



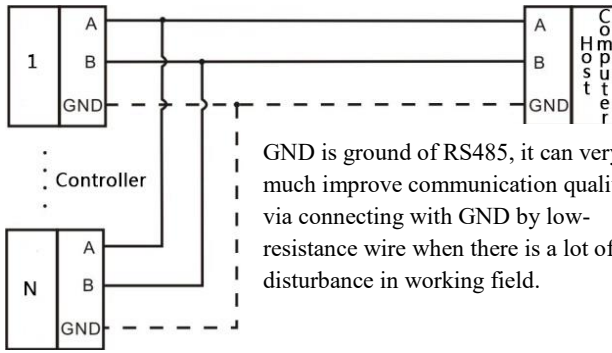
2.3 Connection of communication Ports

The product supports one channel 485 and one channel RJ45 network port communication, and supports Modbus-RTU/Auto Send/YH/Auto_MAC/Modbus-TCP /IP protocols. Communication parameters (see Section 8 for communication addresses)

Serial port（RS485）	COM ID	Slave serial number used by serial port 1.Initial value: 1. Parameters range: 1 to 247. This only works if the communication protocol has a slave number.	
	Baudrate	1200, 9600,38400, 19200, 57600, 115200 are optional. Initial value: 38400bit/s	
	Data format	Parameters range: 8-E-1, 8-O-1, 8-N-1, 7-E-1, 7-O-1 (data bit, parity bit, stop bit). Initial value: 8-E-1. The Modbus RTU protocol can be 8-E-1, 8-O-1, or 8-N-1.	
	Comm protocol	Modbus RTU, Auto Sending、YH、Auto Send MAC. Initial value: Modbus RTU	
	Dual format	Parameters range: AB-CD, CD-AB. Initial value: AB - CD	
	Sending interval	Continuous sending interval, initial value 0.000, range 0.000-9.999s	
TCP	IP address	Destination IP address(auto send mode)	Initial value: 192.168.101.246; Parameters range: 0.0.0.0 to 255.255.255.255
		Local port(Modbus TCP mode)	
	Port number	Target port (auto send mode)	Initial value: 502; Parameters range: 0 to 65535
		Destination IP address(auto send mode)	
	Mask	Initial value: 255.255.255.000	
	Gateway	Initial value: 255.255.255.000	
	TCP Protocol	Modbus TCP、Auto send、Auto Send_MAC. Initial value: Modbus TCP	
	Dword Format	Parameters range: AB-CD, CD-AB. Initial value: AB - CD	

	Send Gap	Continuous sending interval, initial value 0.000, range 0.000-9.999s
	C/S Mode	Parameter range: server, client. Initial value: server (Only applicable to Auto Send and Auto Send_MAC protocol) Client mode: Just set the target IP address and target port number and it will automatically connect to the target server. Server mode: only need to set the local IP address and local port number.
GPRS	For details, please refer to Chapter 11.1 GPRS Communication Parameters.	
COM Reset	Press the [Enter] key to restore the instrument communication parameter values to the factory settings.	

2.3.1 Serial port connection



GND is ground of RS485, it can very much improve communication quality via connecting with GND by low-resistance wire when there is a lot of disturbance in working field.

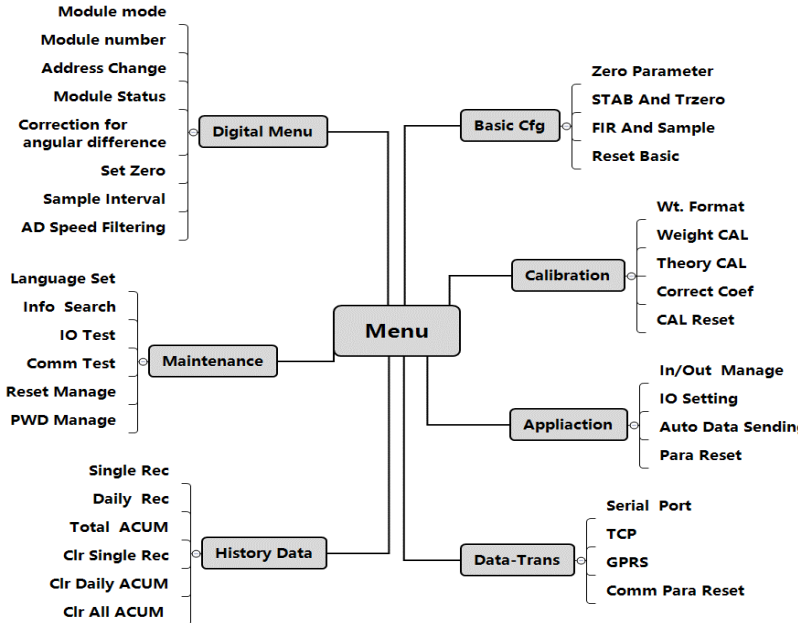
2.3.2 Network port connection

The instrument is equipped with a network communication interface, which is connected with an RJ-45 crystal head to realize communication with the host computer or PLC.

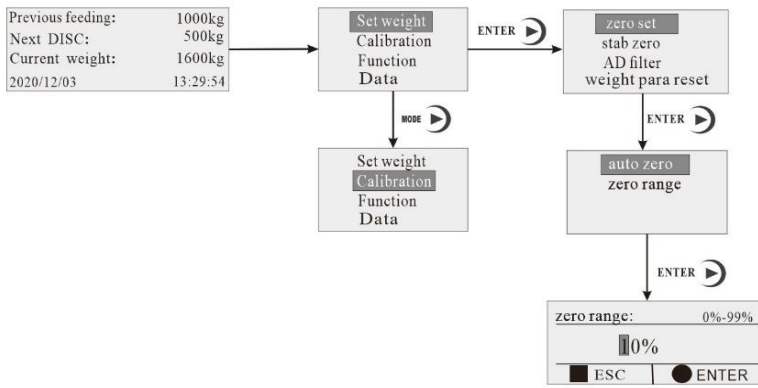
Modbus/TCP/Auto-Report/Auto-Report_MAC communication protocol is

adopted. After inserting the network cable, the green indicator light of the network port slot is always on, indicating that the network cable is connected well, and the orange indicator light flashes, indicating that the network card has received network data.

Chapter 3 Menu overview

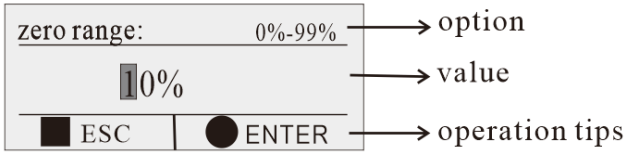


3.1 Parameters Selection and Setting



1) In the main interface, press MODE ▶ enter parameters setting interface.
2) Press OPTION ▲ , MODE ▶ to switch selection parameters.
3) Press ENTER ● to complete the parameters settings.
4) Press ZERO/ESC ■ to exit.

Parameters Settings:



1) OPTION ▲ , MODE ▶ ;Switch parameters value.

Chapter 4 Setting parameters of weighing

Parameters		Functional description
Zero Parameter	PWR-ON Zero	Set zero range during power-on. If the value is 0, the zero range will not be performed during power-on. Initial value: 0;Parameters Range: 0 to 99%
	Zero Range	Sets the range that zeroing is allowed. Initial value: 20%;Parameters Range: 0 to 99%
STAB&TrZero	STAB Timer	In this time, the weight change range is not greater than STAB Range, considered stable. Initial value: 1.000s;Parameters Range: 0.100 to 9.999s.
	STAB Range	During the Stable time, the weight variation range is not greater than STAB range, and it is considered stable. Initial value: 1d;The value ranges from 0 to 99d
	TrZero Time	In the set time, the weight change range is less than the Tr-Zero Range, automatic tracking zero. Initial value: 1.000s;Parameters Range: 0.100 to 9.999 seconds
	TrZero Range	When the weight change range is less than this set Tr-Zero Range, zero will be automatically tracked. Initial value: 0d;The value ranges from 0 to 99d
FIR And Sample (Only valid in Analog mode)	Digital filtering	Digital filter, the higher the level, the stronger the filtering, but the longer the response time. Initial value:4;Parameters Range: 0 to 9
	Adv. Filter	Steady-state filter, which is enabled when the weight is in a steady state. The higher the level, the stronger the filtering, but the longer the response time. Initial value: 0;Parameters Range: 0 to 9
	Sampling frequency	Sampling frequency, initial value: 100 times/s. Range: 50,60,100,120,200,240,400,480 times/s. Optional.
Reset Basic		Press ENTER(Confirm Key) to restore the factory Settings of weighing parameters.

Chapter 5 Calibration parameters

Parameters		Functional description
WT.Format	Unit	A unit used for indicating weight. Initial value: kg Range: 0:kg/1:g/2:t/3:lb
	Decimal	The number of decimal points used for weight indication. Initial values: 0. Parameters range: 0/0.0/0.00/0.000
	Division	The smallest unit of change in weight. Initial value: 1. Parameters: 1/2/5/10/20/50/100/200/500 (d)
	Full scale	Maximum weight that can be displayed. Initial value: 10000 Parameters range: 1~(100000* division)
Weight CAL	Auto Capture	The actual millivolt of the current loadcell is displayed
	Key In mV	Input the zero millivolt value manually for zero calibration without weight.
	Weight calibration	Perform weight calibration parameters
Theoretical Calibration (Theory CAL,only valid in Analog mode)	LC mV/V	Average value of the true sensitivity of the connected loadcell, initial value: 2.0000.Range: 0.0001-5.0000 mV/V
	LC Capacity	The sum of the real range of the loadcell; Initial value: 10000 Range: 0-999999
	Use T-CAL	Choose to enable the theoretical value to calibrate and calculate the weight; Initial value: Off. Range: on/off
Correct Coef		Used to correct the weight value, the showing weight=correction factor * weight calculated by the calibration parameters (theoretical value parameters);Initial value: 1.0000. Range: 0.00001-9.99999
CAL Reset		Press ENTER(Confirm Key) and input the calibration password to restore the factory Settings of the calibration parameters.

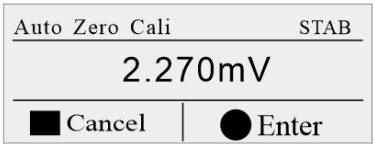
5.1 Zero Calibration

Zero calibration function can be completed by interface operation and

communication port operation.

Interface operation: Weighing interface --> [Calibration] menu --> [WT. Format]

Auto Capture



Stable/Unstable: The loadcell status is only allowed in a stable state.

2.270mV: is the millivolt of the current loadcell (value should be the actual value on site)

■ Key---Cancel: Press ZERO/ESC ■ Key to exit the automatic zero calibration interface.

● Key---Confirmation: Press ENTER ● Key to complete zero calibration (zero calibration operation can be completed only in a stable state. Otherwise, an alarm interface will pop up.)

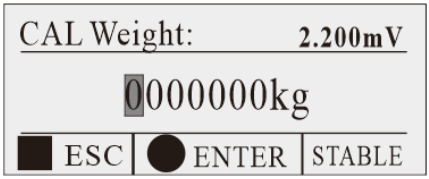
Note: 1) Automatic zero calibration defines the current state as zero. The platform should be emptied before execution.

2) Record "current loadcell millivolt value", so as to carry out "input zero calibration" when it is inconvenient to empty the platform.

【Key In mV】

Manually input millivolt value for weightless calibration.

5.2 CAL Weight



Calibration steps:

1） Enter the weight calibration interface

2） Add weights to the weighing table

3） Valid until stable output

4） Enter the weight corresponding to the weight value

5） Press ENTER Key to complete weight calibration.

5.3 Theoretical calibration

The theoretical value calibration refers to the weight calibration operation through the input connection of load cell sensitivity and load cell range value.

Theoretical value calibration requires 3 steps:

1） Set load cell sensitivity (for example, connect multiple loadcells and enter the average value of sensitivity)

2） Set the total loadcell range (such as connecting multiple loadcells, input the sum of the total loadcell range)

3) Turn on the "Use T-CAL" switch

Chapter 6 Application Settings

6.1 Application Setting Parameters

Parameters		Functional description
In/Out Manage	Min In Wt.	When the positive weight change is greater than this value, the instrument considers that feeding operation has occurred. If 0, no judgment feeding operation is performed Initial value: 1;Range: 0-999999
	Min Out Wt.	When the negative weight change is greater than this value, the instrument considers that discharging operation occurs; If 0, no judgment operation will be performed Initial value: 1;Range: 0-999999
	In/Out Delay	In the set period of time, the weight does not change, it is considered that completing the material in and out. Initial value: 1.000s;Range: 0.100 to 99.999
	In and Out stable delay	Within the set time period, if the weight no longer changes, it is considered that the material loading and unloading is completed. Initial value: 1.000s; Range: 0.100-99.999
	In&Out Switch	Up and down switch for loading and unloading materials. Turn on this switch. When loading or unloading materials at a constant speed, the weight of the person on the tank or the next person (if the person does not come down) will be subtracted after the loading and unloading of materials. It is only suitable for single use. Individual up and down, the time interval between each up and down is 10 seconds Initial value: off
Auto sending		After this function is enabled, the incoming and outgoing material frames in GPRS communication will be automatically reported. Initial value: off; Range: on/off.
App reset		Press ENTER(Confirm key) and input the calibration password to restore the factory Settings of the calibration parameters.

Note：The IO port function is temporarily unavailable.

※ Adaptation of input and output parameters：

In order to deal with the small flow rate, about 1 ton to 3 tons per hour, the weight is detected every 30 seconds without feeding or adding materials. The weight increases or decreases by more than 9 for 3 consecutive times, and the incoming and outgoing material parameters are automatically adjusted (The delay before incoming and outgoing materials is changed to 0.5s, the delay before incoming and outgoing materials is changed to 30 seconds, and the minimum incoming and outgoing material weight is 1.

6.2 History Data Parameters

Parameters	Functional description
Single Rec	Save 100 sets of single cumulative historical data.
Daily Rec	Record the cumulative data of incoming and outgoing materials for the day.
Total ACUM	Record the total cumulative data of incoming and outgoing materials.
Clr Single Rec	Clear single record operation
Clr Daily ACUM	Clear single day cumulative operation
Clr All ACUM	Clear Total Accumulated Operations

Chapter 7 System Maintenance

Parameter	Instruction	
Language Set	Switch between Chinese and English display; initial value: Chinese; optional: Chinese/English.	
Info Search	Software No	View the compilation date and time and corresponding version information of the front and backend.
	MAC Addr	Check the MAC address, modification is not supported.
	Date /Time	Set current time and date.
IO Test	Input Test	Note：The function is not enabled yet, this item is reserved
	Output Test	
Comm Test	RCV test	Serial communication test function, please see Chapter 7.1 for details.
	Send test	
Reset Manage	WT para Reset	Press the [Enter] key to restore the weighing parameter values of the instrument to the factory settings.
	Cal para Reset	Press the [Enter] key to restore the instrument calibration parameter values to the factory settings.
	Func para Reset	Press the [Enter] key to restore the instrument application parameter values to the factory settings.
	Comm para Reset	Press the [Enter] key to restore the instrument communication parameter values to the factory settings.
	His para Reset	Press the [Enter] key to clear historical data such as single records, single-day accumulation, and total accumulation with one click.
	Non-Cal Reset	Press the [Enter] key to restore all parameter values of the instrument except calibration to factory settings.
	All Para Reset	Press the [Enter] key to restore all parameter values of the instrument to factory settings.

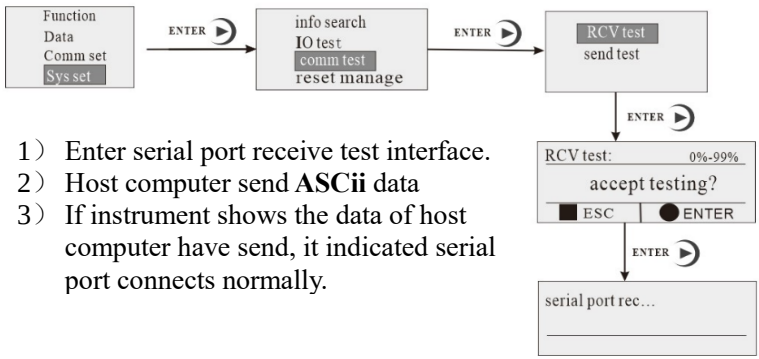
	WT para Reset	Press the [Enter] key to restore the weighing parameter values of the instrument to the factory settings.
PWD Manage	WT PWD Set	This item is used to modify the password of various parameters and whether the password protection function needs to be turned on. Turn on protection: "On/Off" is optional. Off: Users do not need to enter a password to enter the corresponding parameters. On: Users need to enter a password to enter the corresponding parameters. Password modification: Users can change the password value of the selected parameter item by themselves. Initial password:000000.
	Calibration Password	
	Cal PWD set	
	Func PWD set	
	Comm PWD Set	
	Sys PWD Set	

7.1 Communication Test

The serial port test function sends and receives data in a fixed baudrate (9600) and data format (8-N-1) to test the serial port connection status.

1) Send test: send data "TEST-nnn".

2) Receiving test: externally send test data (only ASCii code) to the instrument, and display the data on the display, the length of each frame of data should not exceed 10 bytes.



1） Enter serial port receive test interface.
2） Host computer send **ASCii** data
3） If instrument shows the data of host computer have send, it indicated serial port connects normally.

Chapter 8 Digital Menu

8.1 Content of Parameter

Parameter		Function Description
Module mode	Digital mode	When a digital sensor is connected, this item is set to digital mode. The weight value displayed in this mode is the real-time accumulated weight of each digital module. (Note: After switching to digital mode, some functions in analog mode cannot be used)
	Analog mode	When an analog sensor is connected, this item is set to analog mode, and the weight value displayed in this mode is the real-time weight of the analog module. (Note: After switching to analog mode, some functions in digital mode cannot be used)
Module Number	Enter the number of digital sensors connected to the meter. Range: 1~8.	
Address Change	Please enter original address	Enter the original address of the digital module whose address needs to be modified. When the address is selected as 0, an address error will be prompted. Range: 0~8.
	Please enter new address	Enter the new address of the digital module whose address needs to be modified. When the address is selected as 0, an address error will be prompted. The address cannot be repeated. If it is repeated, the "address exists" alarm message will be displayed. Range: 0~8.
Module Status	Module Info	Display the real-time weight of all connected digital modules or prompt information when the module is disconnected. Press MODE switch the digital module display.
Correction for angular difference	Angular difference coefficient calculation	The angle difference coefficient value is automatically calculated when the weighing platform is empty and when the module is pressed. The number of pressure angles depends on the number of modules set. For

		specific operations, please refer to the angle difference correction in Chapter 8.2 Operating Instructions. (Note: When the number of modules selected is 0, it will prompt that the current number of modules is zero, and the interface for calculating the angle difference coefficient will not be entered)	
	Angle difference coefficient check	When connecting multiple digital sensors, if the level or height of the weighing items carried is inconsistent, weighing errors will occur. In this case, it is necessary to adjust the angle difference coefficient to make the system work normally. This item can view the current angle difference coefficient value and modify the angle. difference coefficient. Range: 0.00000~8.00000	
	Angle difference coefficient reset	Reset angle difference coefficient, the value of the angle difference coefficient after reset is 1.00000.	
Set Zero		Used to calibrate the zero point of the module in digital mode.	
Sample Interval		The time it takes for the instrument and m odule to communicate once, initial value: 1 00ms; 20ms/50ms/80ms/100ms optional.	
AD Speed Filtering		Select module address	Set the module address that needs to modify the AD filter parameters.
		Sample Interval	Modify the AD sampling speed of the corresponding module address, initial value: 50 times/second; 50 times/second, 100 times/second, 200 times/second, 400 times/second optional.
		Average filter	Modify the average number

	number	of filters corresponding to the module address, initial value: 1; 1, 2, 4, 8 optional.

8.2 Operation Instruction

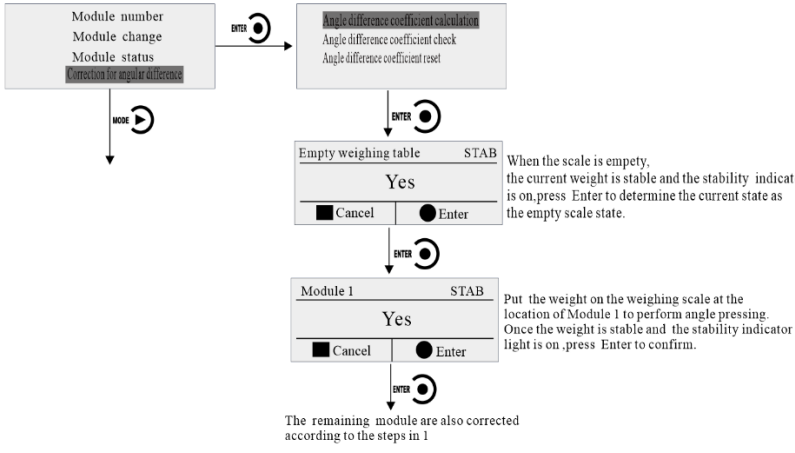
1) Mode Choice：Select digital mode in [Digital Menu]-[Module Mode] and confirm。

2) Enter the actual number of connected digital modules in [Digital Menu]-[Module Number] and confirm.

3) Address change: Since the module address defaults to 1 when the module leaves the factory, the module address needs to be changed through instrument operation. When changing the module address through [Digital Menu]-[Address Change], only one digital module can be connected at the same time to change its address. The module addresses must correspond one to one, and there cannot be duplicate addresses, otherwise data errors will occur.

4) After changing the module address, you can check whether the address has been modified through [Digital Menu]-[Module Status]. Displays the true weight of the corresponding module; if the module is working abnormally, it will display that the module is offline.

5) Angle difference correction: perform pressure angle correction, the steps are as shown in the figure.



6) After connecting the module, changing the module address and correcting the angle difference, enter [Calibration] Menu - [Weight Calibration] to perform zero calibration and weight gain calibration. For specific operations, please check the zero calibration in 5.1 and CAL weight in 5.2. (Note: In this digital mode, the theoretical calibration function is not available)

Chapter 9 MODBUS communication

9.1 Modbus protocol

GMT-H1 supports 1 way RS485 serial port and 1 network port. Supports Modbus-RTU(serial port),YH protocol, Modbus-TCP/IP(network port) communication mode and automatic reporting mode.

9.2 MODBUS Function Code and Exception Code

◆ Function codes supported by the instrument:

Function code	Item	Instructions
03	Read register	Up to 125 single read registers
06	Write a single register	
16	Write multiple registers	This transmitter command only supports writing to the double register. When writing, the address must be aligned. It is not allowed to write only part of the double register.
01	Read the coil	Note that this length is in bits.
05	Write the coil	

Note: this instrument only supports the above MODBUS function codes, the instrument will not respond to other function codes.

◆ **MODBUS exception code response**

code	Item	meaning
02	Illegal data address	For this instrument, the error code indicates that the received data address is an invalid address.
03	Illegal data value	The part of data written and the range allowed.
04	Computer fault	An unrecoverable error occurred while the instrument was attempting to perform the requested operation.
07	Unsuccessful programming request	For the instrument, the command received cannot be executed in the current condition.

9.3 MODBUS Communication Address

Function address	PLC address	Meaning	Instructions	
The following is readable (read function code 0x03)				
0000-0001	**40001-40002**	Weight status	sign, int	
0002	**40003**	Weight status flag bit	**D12-15**	Reserved. Return 0
			D11	Use theoretical weights
			D10	Reserved. Return 0
			D9	Reserved. Return 0
			D8	Millivolt number is stable, (the indicator of millivolt number to judge stability during calibration)
			D7	Negative loadcell overflow, lower than the allowable loadcell voltage range
			D6	The loadcell is overflowing, exceeding the allowable loadcell voltage range
			D5	Weight negative overflow, weight less than "-(maximum range + 9d)"
			D4	Weight overflow, weight greater than "maximum range + 9d")
			D3	Overflow status, (abnormal weight or loadcell
			D2	Display weight negative sign,(display weight negative)
			D1	Zero point (weight within 0+/- 1/4 d range)

			D0	Stability (stability indicator of weight determination)
0003	**40004**	Process status bit	**D15**	Feeding
			D14	Discharging
			D0-13	Reserved
0004-0013	**40005-40014**	Reserved		
0014-0015	**40015-40016**	Weight		Display values, symbols, float type
0016-0023	**40017-40024**	Reserved		
0024-0025	**40025-40026**	AD internal code after filtering		After filtering AD original code
0026-0027	**40027-40028**	Loadcell voltage		Voltage input to loadcell, 4 decimal points
0028-0029	**40028-40030**	Relative zero voltage		Voltage relative to zero point, 4 decimal points
0030-0039	**40031-40040**	Reserved		
0040	**40041**	Calibration Error Code	**bit12-bit15**	Read-only, returns 0
			bit11	The maximum range is too large
			bit10	The maximum range is too small
			bit9	Beyond minimum resolution
			bit8	Weight input exceeds maximum range
			bit7	Input Weight cannot be zero
			bit6	The relative zero voltage is negative
			bit5	Loadcell overflow during weight calibration
			bit4	Negative loadcell overflow during

				weight calibration
			bit3	Weight calibration is unstable
			bit2	Loadcell overflow during zero calibration
			bit1	Negative loadcell overflow during zero calibration
			bit0	Zero calibration is unstable
0041	**40042**	Zeroing error code	**bit6-bit15**	Read-only, returns 0
			bit5	The loadcell overflowed during zeroing
			bit4	Negative loadcell overflow during zeroing
			bit3	Unstable at zeroing
			bit2	Out of range at zeroing
			bit1	unstable during power-on zeroing
			bit0	Power-on zeroing exceeds the threshold
0042-0046	**40043-40047**	Reserved		
0047	**40048**	Input status area (IN1-IN3)	Bit3-bit15	Read-only, returns 0
			bit2	Input 3 status
			bit1	Input 2 status
			bit0	Input 1 state
0048	**40049**	Output status area (OUT1-OUT3)	Bit3-bit15	Read-only, returns 0
			bit2	Output 3 state
			bit1	Output 2 state
			bit0	Output 1 state

0049	**40050**	Customizing I/O status area (IO1-IO3)	**Bit3-bit15**	Read-only, returns 0
			bit2	Custom IO3 status;1: valid (input mode: valid, output mode: valid)
			bit1	Custom IO2 status;1: valid (input mode: valid, output mode: valid)
			bit0	Custom IO1 status;1: valid (input mode: valid, output mode: valid)
0050-0099	**40051-40100**	Reserved		
0100-0101.	**40101-40102.**	Power-on Zero Range	Initial value: 0 (The power-on and reset function is disabled) Range: 0~99% (full scale percentage)	
0102-0103	**40103-40104**	Reserved		
0104-0105	**40105-40106**	Zero Range	Initial value: 20%; Range:1~99%(full scale percentage)	
0106-0113	**40107-40114**	Reserved		
0114-0115	**40115-40116**	STAB Range	Initial value: 1; Range: 0 ~ 99 d	
0116-0117	**40117-40118**	STAB Time	Initial value: 1.000; Range: 0.100 ~ 9.999s	
0118-0119	**40119-40120**	Trzero Range	Initial value: 0; Range: 0 ~ 99 d	
0120-0121	**40121-40122**	Trzero Time	Initial value: 1.000; Range: 0.100 ~ 9.999 s	
0122-0123	**40123-40124**	Digital Filtering	Initial value: 4; Range: 0 ~ 9	
0124-0125	**40125-40126**	Steady Filtering	Initial value: 0; Range: 0 ~ 99 d	
0126-0127	**40127-40128**	AD Sampling Speed	Initial value: 2; Range: 0~7; corresponding to 50-480 times/second	

			respectively.
0128-0199	**40129-40200**	Reserved	
Calibration para area, the following content is readable and writable (read function code is 0x03, write function code is 0x16)			
0200-0201	**40201-40202**	Unit	Initial value: 0; Range: 0: kg, 1: g, 2: T, 3: lb
0202-0203	**40203-40204**	Decimal	Initial value: 0 (0); Range: 0:0; 1-0. 0; 2-0. 00; 3-0. 000
0204-0205	**40205-40206**	Division	Initial value: 1; Range: 1/2/5/10/20/50/100/200/500 d
0206-0207	**40207-40208**	Full Scale	Initial value: 10000; Range: 1~(100000* division value)
0208-0209	**40209-40210**	Reserved	
0210-0211	**40211-40212**	Auto Capture	Write: 1 for zero calibration Read: indicates the millivolts of the current loadcell
0212-0213	**40213-40214**	Key In mV	0-15000 (3 decimal points), Write: write the voltage value as the zero point voltage Reading: the mV number of the current zero point)
0214-0215	**40215-40216**	CAL Weight	Write: weight value standard gain. Read: gain millivolt value.
0216-0223	**40217-40224**	Reserved	
0224-0225	**40225-40226**	LC mV/V	Write: Sensitivity value Read: Sensitivity value set last time
0226-0227	**40227-40228**	LC Capacity	Enter the sum of all loadcell ranges
0228-0229	**40229-40230**	Use T-CAL	0: disables the function of calculating the theoretical weight 1: Using the theoretical value to calculate the weight
0230-0231	**40231-40232**	Correct Coef	Fixed 5 decimal points
0232-0299	**40233-40256**	**Reserved**	

Digital mode parameter address 1			
0256	**40257**	Address change original address	Range: 1-8, readable and writable
0257	**40258**	Address change new address	Range: 1-8, readable and writable
0258	**40259**	AD speed filter module address selection	Range: 1-8, readable and writable
0259	**40260**	Digital module AD sampling speed	0:50 times/second, 1:100 times/second, 2:200 times/second, 3:400 times/second are optional, and can be read and written.
0260	**40261**	Average number of filters in digital modules	1, 2, 4, 8 optional, readable and writable
0261	**40262**	Empty scale angle difference correction	0: Aerial scale time angle difference correction 1: No
0262	**40263**	Module 1 correction	0: Module 1 pressure angle correction 1: No
0263	**40264**	Module 2 correction	0: Module 2 pressure angle correction 1: No
0264	**40265**	Module 3 correction	0: Module 3 pressure angle correction 1: No
0265	**40266**	Module 4 correction	0: Module 4 pressure angle correction 1: No
0266	**40267**	Module 5 correction	0: Module 5 pressure angle correction 1: No
0267	**40268**	Module 6 correction	0: Module 6 pressure angle correction 1: No

0268	**40269**	Module 7 correction	0: Module 7 pressure angle correction 1: No
0269	**40270**	Module 8 correction	0: Module 8 pressure angle correction 1: No
0270	**40271**	Angle difference correction coefficient reset	Reset the angle difference coefficient. After reset, the angle difference coefficient is 1.
Process para area, the following contents are readable (read function code is 0x03)			
0300-0301	**40301-40302**	Reserved	
0302-0303	**40303-40304**	Minimum feed weight	
0304-0305	**40305-40306**	Minimum discharge weight	
0306-0307	**40307-40308**	Feed in and out delay	
0308-0349	**40309-40350**	Reserved	
100 pieces of historical single incoming and outgoing material data			
0350-0351	**40351-40352**	Start time of feeding (month/year/day) The first and second bytes are years, the third byte is months, and the fourth byte is days	
0352-0353	**40353-40354**	Start time of feeding (hour/minute/second) The first byte is 0, the second byte is hour, the third byte is minute, and the fourth byte is second	
0354-0355	**40355-40356**	Historical weight of incoming and outgoing materials 1. Negative number means discharge, positive number means incoming material	
0356-0949	**40357-40358**	The 2th Material loading and unloading start time (year, month, day) The first and second bytes are the year, the third byte is the month, and the fourth byte is the day.	
0358−0359	**40359−40360**	the 2th Material discharging and discharging start time (hours, minutes and seconds) The first byte is 0, the second byte is hours, the third byte is minutes, and the fourth byte is seconds.	
0360−0361	**40361−40362**	The second historical input and output material	

		weight, the negative number is the output material, the positive number is the input material	
0362−0949	**40363−40950**	You can read the remaining 98 groups (a total of 100 groups) of historical incoming and outgoing material information according to the above two sets of historical incoming and outgoing material reading sequence examples 40351-40362. When there are more than 100 pieces of data, the first piece of data will be removed. That is, up to 100 pieces of incoming and outgoing material data can be read.	
60 sets of single-day input and output data			
0950-0951	**40951-40952**	Day 1 feeding time (year, month, day)	
0952-0953	**40953-40954**	Accumulated weight of feed on day 1	
0954-0955	**40955-40956**	Accumulated weight of discharge on day 1	
0956-1309	**40957-41310**	You can follow the example of reading the order of incoming and outgoing materials from 40951 to 40956 above, and read the cumulative data of incoming and outgoing materials from the last 59 (total of 60 days) days.	
1. 4X00951-4X00956 of PLC address is the oldest data accumulated in a day 2. If 60 pieces of data are stored, 4x01305-4x01310 of PLC address is the latest data accumulated in a day 3. If 60 records are added, the old records will be deleted and new records will be added. The second-to-last will be offset to the oldest data, which still satisfies 1,2 above			
Total cumulative weight			
1310-1311	**41311−41312**	Total feed accumulated	
1312-1313	**41313−41314**	Total output accumulated	
In the serial port para area, the following contents are read/write bit status (read function code is 0x03, write function code is 0x06)			
8000	**48001**	RS485 Slave ID	Initial value:1. Range: 1 to 247
8001	**48002**	RS485 Baud rate	Initial value 3:38400 0:1200/1:9600/2:19200/3: 38400/4:57600/5:115200

			optional
8002	**48003**	RS485 Protocol	Initial value: 0:modbus RTU 0: Modbus RTU; 1: Auto Sending; 2:YH; 3:Auto send-mac
8003	**48004**	RS485 Data Format	Initial value: 0:8-E-1.Range: 0:8-E-1; 1:8-O-1; 2:8-N-1; 3: 7-E-1; 4:7-O-1 (meaning: data bit---parity bit---stop bit)
8004	**48005**	RS485 Dual Format	Initial value: H-L. 0: H - L;1:L-H
8005	**48006**	RS485 comm Interval	Range: 0 ~ 9999
8006-8099	**48007-48051**	Reserved	
Digital table parameter address 2			
8051	**48052**	Module mode	0: Analog mode; 1: Digital mode. Readable and writable
8052	**48053**	Module number	Range: 0-8; readable and writable
8053	**48054**	Module disconnected	If the module is normal, the reading is 1; if the module is faulty, the reading is 0. read only
8054	**48055**	Sampling interval	0-3, optional (0:20ms, 1:50ms, 2:80ms, 3:100ms); readable and writable
8055-8070	**48056-48071**	Reserved	
8071-8072	**48072-48073**	Module 1 angular difference coefficient	Range: 000000-999999; readable and writable
8073-8074	**48074-48075**	Module 2 angular difference coefficient	Range: 000000-999999; readable and writable
8075-8076	**48076-48077**	Module 3 angular difference	Range: 000000-999999; readable and writable

		coefficient	
8077-8078	**48078-48079**	Module 4 angular difference coefficient	Range: 000000-999999; readable and writable
8079-8080	**48080-48081**	Module 5 angular difference coefficient	Range: 000000-999999; readable and writable
8081-8082	**48082-48083**	Module 6 angular difference coefficient	Range: 000000-999999; readable and writable
8083-8084	**48084-48085**	Module 7 angular difference coefficient	Range: 000000-999999; readable and writable
8085-8086	**48086-48087**	Module 8 angular difference coefficient	Range: 000000-999999; readable and writable
8087-8099	**48088-48100**	Reserved	
In the network port para area, the following contents are read/write bit status (read function code is 0x03, write function code is 0x06)			
8100	**48101**	TCP comm protocol	0: Modbus TCP/IP; 1: Auto Send 2: Auto Send MAC
8101	**48102**	H/L Letter	0: H-L 1: L-H, initial value: 0
8102	**48103**	Network port Sending interval	Range: 0 ~ 9999
8103	**48104**	Local IP1	IP address. Initial value: 192.168.101.246 Parameter ranges: 0.0.0.0 - 255.255.255.255
8104	**48105**	Local IP2	
8105	**48106**	Local IP3	
8106	**48107**	Local IP4	
8107	**48108**	Destination IP1	
8108	**48109**	Destination IP2	
8109	**48110**	Destination IP3	
8110	**48111**	Destination IP4	
8111	**48112**	Loacal Network port	Initial value:502. Parameter range:0-65535
8112	**48113**	Destination Network port	

8113	**48114**	Network port subnet mask 1	Initial value: 255.255.255.000; Parameter range: 0.0.0.0~255.255.255.255
8114	**48115**	Network port subnet mask 2	
8115	**48116**	Network port subnet mask 3	
8116	**48117**	Network port subnet mask 4	
8117	**48118**	Network Port Gateway 1	Initial value: 192.168.000.001; Parameter range: 0.0.0.0~255.255.255.255
8118	**48119**	Network Port Gateway 2	
8119	**48120**	Network Port Gateway 3	
8120	**48121**	Network Port Gateway 4	
8121	**48122**	C/S mode selection	0: server, 1: client Initial value: 0
8122-8249	**48122-48250**	Reserved	
8250	**48251**	GPRS target IP1	Initial value: 192.168.101.246, Parameter range: 0.0.0.0~255.255.255.255
8251	**48252**	GPRS target IP2	
8252	**48253**	GPRS target IP3	
8253	**48254**	GPRS target IP 4	
8254	**48255**	GPRS target port	Initial value: 502; Parameter range: 0~65535
8255	**48256**	GPRS heart rate	Initial value: 30s. Range: 0-3600s
8256	**48257**	GPRS comm ON/OFF	0: GPRS is disabled. 1: GPRS is enabled
8257	**48258**	GPRS reactivate	Write only, 1: active
8258	**48259**	The GPRS IMEI1	read-only
8259	**48260**	The GPRS IMEI2	
8260	**48261**	The GPRS IMEI3	
8261	**48262**	The GPRS IMEI4	
8262	**48263**	The GPRS IMEI5	
8263	**48264**	The GPRS IMEI6	

8264	**48265**	The GPRS IMEI7	
8265	**48266**	The GPRS IMEI8	
8266	**48267**	The GPRS IMSI1	
8267	**48268**	The GPRS IMSI2	
8268	**48269**	The GPRS IMSI3	
8269	**48270**	The GPRS IMSI4	
8270	**48271**	The GPRS IMSI5	
8271	**48272**	The GPRS IMSI6	
8272	**48273**	The GPRS IMSI7	
8273	**48274**	The GPRS IMSI8	
8274-8799	**48275-48900**	Reserved	
Reset para area, the following contents are read/write bit state (read function code is 0x03, write function code is 0x06)			
8900	**48901**	Reset all paras	Reset para address area: Write 1 in the corresponding address to reset the para. For example, write 1 to address 8900 to complete the reset of all paras.
8901	**48902**	Reset all paras(except calibration paras)	
8902	**48903**	Reset Calibration paras	
8903	**48904**	Reset weighing paras(basic paras of transmitter)	
8904	**48905**	Reserved	
8905	**48906**	Reset Application paras	
8906	**48907**	Clear Historical Data	
8907	**48908**	Reset serial port paras	
8908	**48909**	Reset network port Paras	
8909	**48910**	Reset GPRS paras	
8910	**48911**	Reset all communication paras	
8911	**48912**	Reset Module Paras	
8912-9999	**48913-410000**	Reserved	
The following is a read-only area (read function code 0x03)			
10000	**410001**	Back-end Software Version (high word)	View the product software version and compilation date address
10001	**410002**	Back-end Software Version (low type)	
10002	**410003**	Back-end Compilation Date (high type)	
10003	**410004**	Back-end Compilation Date	

		(low type)	area
10004	**410005**	Instrument serial number 1th character	
10005	**410006**	Instrument serial number 2th character	
10006	**410007**	Instrument serial number 3th character	
10007	**410008**	Instrument serial number 4th character	
10008	**410009**	Instrument serial number 5th character	
10009	**410010**	Instrument serial number 6th character	
10010	**410011**	Instrument serial number 7th character	
10011	**410012**	Instrument serial number 8th character	
10012	**410013**	Instrument serial number 9th character	
10013	**410014**	Instrument serial number 10th character	
10014	**410015**	Instrument serial number 11th character	
10015	**410016**	Instrument serial number 12th character	
10016	**410017**	Instrument serial number 13th character	
10017	**410018**	Instrument code 01th character	
10018	**410019**	Instrument code 02th character	
10019	**410018**	Instrument code 03th character	
10020	**410021**	Instrument code 04th character	
10021	**410022**	Instrument code 05th character	
10022	**410023**	Instrument code 06th character	
10023	**410024**	Instrument code 07th character	
10024	**410025**	Instrument code 08th character	
10025	**410026**	Instrument code 09th character	
10026	**410027**	Instrument code 10th character	
10027	**410028**	Instrument code 11th character	

10028	**410029**	Instrument code 12th character	
10029	**410030**	Reserved	
10030	**410031**	Instrument model character 1	
10031	**410032**	Instrument model character 2	
10032	**410033**	Instrument model character 3	
10033	**410034**	Instrument model character 4	
10034	**410035**	Instrument model character 5	
10035	**410036**	Instrument model character 6	
10036	**410037**	Instrument model character 7	
10037	**410038**	Instrument model character 8	
10038	**410039**	Instrument model character 9	
10039	**410040**	Instrument model character 10	
10040-10099	**410041-410100**	Reserved	
10100	**410101**	Network port 0 Instrument Mac address, 0-255	
10101	**410102**	Network port 0 Instrument Mac address 2, 0-255	
10102	**410103**	Network port 0 Instrument Mac address 3, 0-255	
10103	**410104**	Network port 0 Instrument Mac address 4, 0-255	
10104	**410105**	Network port 0 Instrument Mac address5, 0-255	
10105	**410106**	Network port 0 Instrument Mac address 6, 0-255	
10106-10299	**410107-410300**	Reserved	
Function coil address, readable and writable (read function code is 0x01, write function code is 0x05)			
300	**00301**	Reset all paras	This area only writes Writing ON is effective and reset is performed. Reads as 0
301	**00302**	Reset Partial paras(all except calibration)	
302	**00303**	Reset Calibration paras	
303	**00304**	Reset weighing paras (basic paras	

		of transmitter)	
304	**00305**	Reserved	
305	**00306**	Reset Application paras	
306	**00307**	Clearing Historical Data	
307	**00308**	Reset Serial port Paras	
308	**00309**	Reset network port Paras	
309	**00310**	Reset GPRS paras	
310	**00311**	Reset all communication Paras	
311	**00312**	Reset Digital Instrument parameter	
312-399	**00313-00400**	Reserved	
Coil address, readable and writable (read function code 0x01, write function code 0x05)			
400	**00401**	Input IN1	read-only area Read out and return the status bits of each input port 0: invalid; 1 valid
401	**00402**	Input IN2	
402	**00403**	Input IN3	
403	**00404**	Output OUT1	
404	**00405**	Output OUT2	
405	**00406**	Output OUT3	
406	**00407**	Customizable IO1	
407	**00408**	Customizable IO2	
408	**00409**	Customizable IO3	

Chapter 10 Automatic Sending Protocol

GMT-H1 Serial port and network port communication can be reported continuously. It can automatically upload instrument status, weight information and material information according to the set interval time. Format of automatically reporting data when there is no incoming or outgoing status.

STX	Slave ID	State	Symbol + /-	Weight	checksum	0D	0A

Among:

STX——1 bit, start character, 02H

Slave ID——3 bits, Range：001 - 247

+/-—— 1 bit, +:2BH; -:2 DH.

Weight——7 bits, including decimal point, high to 0 without decimal point

Checksum——2 bits, checksum. Calculation: add all the preceding values and convert them to decimal, then take the last two digits and convert them to ASCII. For example, if the sum of 02 30 30 31 41 2B 20 30 30 30 30 39 35 32 39 31 0D 0A is 24F, the value is 591 in decimal notation. If the last two digits are 9 and 1 are ASCII, the value is 39 31

Status:

Status bit description								
Order	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Define	-	-	-	-	-	1-zero	1-overflow	1-stable
Describe	0	1	0	0	0	0-not zero	0-normal	0 -unstable

Automatically report data format when incoming or outgoing material state

STX	Slave ID	In&Out	Start time	End Time	Weight	Checksum	0D	0A

In&Out- -- 1 bit, I(feed) : 49H;O(discharge) : 4FH

Start/End time--12 bits, corresponding to year, month, day, hour, minute, second.

For example, the following data is reported:

02 30 30 31 4F 32 30 31 31 32 30 31 39 35 31 33 35 32 30 31 31 32 30 31 39 35 31 35 38 20 30 30 30 37 36 37 38 33 0D 0A

The reported information is:

Slave ID: 01

State: outgoing material

Start time: 19:51:35, 20th Of November, 2000

End time: 19:51:58, 20th Of November, 2000

Weight data: 767

The reported data are:

02 30 30 31 40 2B 20 30 30 33 37 35 35 39 34 0D 0A

The reported information is:

Slave machine number: 01

State: current weight is positive (not in and out state)

Weight data: 3755

Chapter 11 GPRS Protocol

11.1 GPRS Communication Parameters

Target IP address	The IP address of the server for communication; Initial value: 192.168.101.246
Destination Socket No	The IP port number of the server for communication; Initial value: 502
Heart rate	The heartbeat packet frequency connected to the server during communication; Initial value: 30s.Range: 0-3600s
GPRS Comm ON/OFF	Whether to enable GPRS communication or reactivate it; Initial value: off;
IMEI||IMSI	The IMEI and IMSI information of the GPRS chip cannot be modified
GPRS status	View the current GPRS status

11.2 GPRS data frame structure description

Data Format	Data frame header 1	Data frame header 2	Data frame length 1	Data frame length 2	Command code	Data content	Terminator
Sender	0xFE	0xFE	2 bytes, 6+ number of bytes of data content		0x01-0x7F	See specific agreement	0xED
Respond	0xFE	0xFE	2 bytes, 6+ number of bytes of data content		0x80 | command code	See specific agreement	0xED

11.3 GPRS protocol

11.3.1 The heartbeat packets

Heartbeat packets	Byte No.	Instrument - > PC	Content	PC -> Instrument	The reply content
single direction (no reply)	**1**	0xFE	The fixed frame header	The PC No Response	The PC No response
	2	0xFE			
	3	0x00	Data frame length		
	4	0x11			
	5	0x01	The command code		
	6	Instrument MAC1	Instrument MAC address		
	7	Instrument MAC2			
	8	Instrument MAC3			
	9	Instrument MAC4			
	10	Instrument MAC5			
	11	Instrument MAC6			
	12	Weight data 1	Current weight, float type, signed data		
	13	Weight data 2			
	14	Weight data 3			
	15	Weight data 4			
	16	Material level data	The lower six bytes correspond to input 1-6		
	17	0XED	terminator		

11.3.2 In&Out materials report frames

In&Out	Byte No.	Instrument - > PC	Report Content	PC-> Instrument	The Reply content
Two-way (with reply)	**1**	0xFE	The fixed frame head	0xFE	The fixed frame head
	2	0xFE		0xFE	
	3	0x00	Data frame length	0x00	Data frame length
	4	0x1F		0x09	
	5	0x02	The command code	0x82	Return command code
	6	Report Serial Number (high 8 digits)	Report the message serial number	Report Serial Number (high 8 digits)	Serial number of the frame to be reported
	7	Report Serial Number (lower 8 digits)		Report Serial Number (lower 8 digits)	
	8	Instrument MAC1	Instrument MAC address	Receiving state	0x01:succeeded; 0x00:failed
	9	Instrument MAC2		0XED	terminator
	10	Instrument MAC3		Note:if the data fails to be reported. need to save the data on the instrument side and report it again until it succeeds.incoming&outgoning material events of incoming&outgoing material data stored in a queue, adopt the way of	
	11	Instrument MAC4			
	12	Instrument MAC5			
	13	Instrument MAC6			

				first in first out, one by one to send to the server, and did not send the backup data in power lost memory, to prevent data loss when the power is cut off, instrument normal boot after will check out whether electricity storage have been sent the historical data, if you have read to send queue to send them one by one, if not then continue to wait for incoming&outgoing material event occurs
	14	years	Start time of in and out materials	
	15	month		
	16	day		
	17	hours		
	18	minutes		
	19	seconds		
	20	years	End time of in and out materials	
	21	month		
	22	day		
	23	hours		
	24	minutes		
	25	seconds		
	26	in&out material mark	0x00:incoming material, 0x01:outgoning material	
	27	Weight data 1	Current weight, float type, signed data	
	28	Weight data 2		
	29	Weight data 3		
	30	Weight data 4		

	31	0XED	End	

11.3.3 Setting GPRS Communication Paras

GPRS	Byte No.	PC -> Instrument	Report Content	Instrument - > PC	The Reply content
Two-way (with reply)	**1**	0xFE	The fixed frame head	0xFE	The fixed frame head
	2	0xFE		0xFE	
	3	0x00	Data frame length	0x00	Data frame length
	4	0x0E		0x09	
	5	0x03	The command code	0x83	Return command code
	6	Download serial Number (high 8 digits)	Download para serial number	Download serial Number (high 8 digits)	Corresponding download para serial number
	7	Download serial number (lower 8 bits)		Download serial number (lower 8 bits)	
	8	Destination IP1	New destination IP address	Receiving state	0x01:succeeded, 0x00:failed
	9	Destination IP2		0XED	End
	10	Destination IP3			
	11	Destination IP4			
	12	Destination port1	New destination port number		
	13	Destination port2			
	14	0XED	End		

11.3.4 Historical data frames

Get historical data	Byte No.	PC -> Instrument	Report Content	Meter->PC	Response content description
Two-way (response)	**1**	0xFE	Fixed frame header	0xFE	Fixed frame header
	2	0xFE		0xFE	
	3	0x00	Data frame length	Data frame length (High 8 bit)	Data frame length
	4	0x0E		Data frame length (Low8 bit)	
	5	0x04	Command code	0x84	Return command code
	6	Download serial number (High 8 bit)	Download parameter serial number	Download serial number (High 8 bit)	Corresponding download parameter serial number
	7	Download serial number (Low 8 bit)		Download serial number (Low 8 bit)	
	8	Year	Query the starting point of time for in&out materials	Total quantity of in&out materials	The number of in&out materials during the time period
	9	Month		Quantity of this transfer	The number of frames transmitted this time
	10	Day		The remaining amount	Remaining untransmitted quantity of in&out materials
	11	Year	Query the end point	MAC1	Meter MAC
	12	Month		MAC2	

	13	Day	of loading and unloading time	MAC3	Address
	14	0XED	End	MAC4	
	15			MAC5	
	16			MAC6	
	17			Year	In and out time
	18			Month	
	19			Day	
	20			Weight data1	The current cumulative weight value of the feed, floating point type
	21			Weight data2	
	22			Weight data3	
	23			Weight data4	
	24			Weight data1	Current discharging cumulative weight value, floating point type
	25			Weight Data2	
	26			Weight Data3	
	27			Weight Data4	
	…….	If the queried data exceeds the maximum amount of data that can be carried by the protocol in one frame, the instrument will report the data in multiple frames until the data reporting is completed.		In&Out material data 2,3,……..N	
	N			0XED	End Character

Chapter 12 YH Protocol

When the serial port communication protocol selects the Yh protocol, the data frame format is automatically adjusted to 8-n-1, and the baudrate is automatically adjusted to 1200. The sending interval is automatically adjusted to 50ms.

Under this protocol, data is output in ASCII code, and each frame of data consists of 9 groups (including decimal points). The data is transmitted first from the low bit to the high bit. There is a group of delimiters "=" between each frame of data. The data sent is the gross weight. For example, the current gross weight is 70.15, and 51.0700=51.0700 is sent continuously...

Such as: 123.9

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

in:

If the high bits are insufficient, 0 will be added. The decimal point occupies 1 byte. When the number is negative, Bit8 will have a negative sign "-".

Chapter 13 Auto Send_MAC Protocol

The product communication protocol supports the automatic sending data format protocol with MAC address. Instrument status, MAC address, weight information, and incoming and outgoing material information can be automatically uploaded at set time intervals.

Automatically report data format when there is no entry or exit.

Automatically report data format when there is no entry or exit.

STX	**Slave ID**	**MAC Address**	**Status**	**Sign +/-**	**weight**	**CheckSum**	**0D**	**0A**

其中：

STX —— 1 bit，Start sign，02H

Slaver ID ——3bit，Range: 001~254

MAC Address —— Last 6 digits

+/- —— 1Bit，+：2BH；-：2DH

Weight —— 7 bit，Including decimal point, if there is no decimal point, the high bit is 0.

Checksum —— 2 bit， checksum. Count method：All the preceding values are added and converted to decimal, then the last two digits are taken and converted to ASCII code. For example, 02 30 30 31 39 33 44 45 42 43 41 2B 20 30 30 31 33 32 33 36 32 0D 0A data sum value is 3C2, the value is converted to decimal 962, the last two digits are 6, and 2 is converted to ASCII for 36 32.

Status：

Status bit description								
Order	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Define	Reserve	Reserve	Reserve	Reserve	Reserve	1-Zero	1-overflow	1-Stable
Description	Fixed:0	Fixed:1	Fixed:0	Fixed:0	Fixed:0	0-Not zero	0-Normal	0-unstable

Automatically report data format when entering or exiting state

STX	Slave ID	MAC Address	In&Out materials	Starting time	End Time	Weight	checksum	0D	0A

In&Out materials——1bit，I(Incoming materials)：49H；O(outgoing materials)：4FH

start/end time——12 bit，Corresponding to: year, month, day, hour, minute and second.

For example, the reported data is:

02 30 30 31 39 33 44 45 42 43 4F 32 30 31 31 32 30 31 39 35 31 33 35 32 30 31 31 32 30 31 39 35 31 35 38 20 30 30 30 37 36 37 36 31 0D 0A

The reported information is：

Slaver ID： **01**

Status：Outgoing material

Starting time：**November 20, 2019 19:51:35**

End time：**November 20, 2019 19:51:58**

Weight Data：**767**

The reported data is：

02 30 30 31 40 2B 20 30 30 33 37 35 35 39 34 0D 0A

The reported information is：

Slaver ID： **01**

Status：The current weight is a positive number（Non-incoming and outgoing status）

Weight Data：**3755**

Chapter 14 Product size