



GM7702

User Manual

GM7702-00180101

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Website: <http://www.gmweighing.com>

Implementation of standards: **GB/T 7724—2008**



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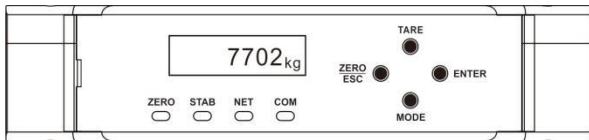
1 General Description

GM7702 weighing indicator is specially designed for weight transmitting in industrial fields. This indicator has the features of small volume, plenty communicating commands, stable performance, easy operation and practicability. It can be widely applied to concrete and bitumen mixing equipment, metallurgy furnace and converter, chemical industry and feed, etc..

1.1 Functions and Characteristics

- small volume, unique design and easy operation
- applicable to all kinds of resistance strain gauge bridge load cell
- front panel numerical calibration
- multilevel of digital filter
- automatic zero-tracking
- automatically zero when power on
- serial communication interface: RS232 or RS485
- calibration via serial interface (Serial interface sets ON)
- support 16-bit resolution **DA** output
- 2 In and 3 Out, support limit control output
- online upgrade via **RS232** serial port
- tare weight function

1.2 Front Panel Description



Status:

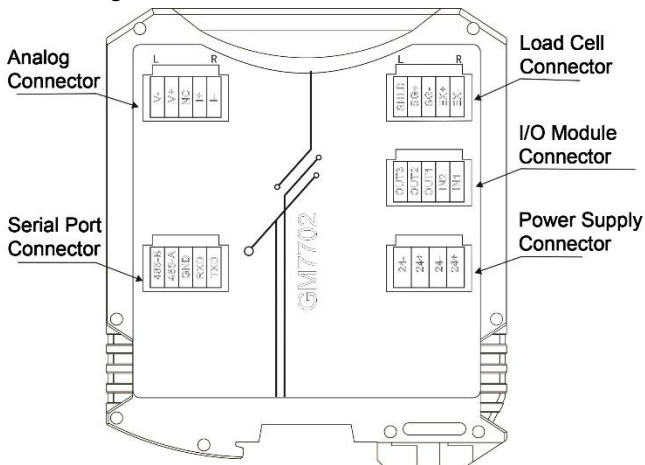
- **ZERO:** Light on when material weight is $0 \pm 1/4d$.
- **STAB:** Light on when material weight is within stable range.
- **NET:** Light on when indicator is in net weight status.
- **COM:** Light on when in communication status.

Keypad:

- **ZERO/ESC:** Used to exit from current operation or go previous page. In the status of net weight, press this key will enter gross weight status.
- **TARE:** In the status of gross weight, press OPTION will tare and indicator show net weight value.
When data input, the main display flash and the flash position will move.
- **MODE:** To make flashing position move to the right digit when data inputting.
- **ENTER:** Enter option when calibration or in parameter setting and can be used as

analog switching display.

1.3 Connector diagram



1.4 Technical Specifications

1.4.1 Common:

Power supply: **DC24V±5%**

Working temperature: **-10~40°C**

Max humidity: **90%R.H** without dew

Power consumption: about **0.8W**

1.4.2 Analog:

Load cell power: **DC5V 100mA (MAX)**

Input impedance: **10MΩ**

Zero steady range: **0.00~12mV** (Load cell 3mV/V)

Input sensitivity: **0.1uV/d**

Input range: **0.00~15mV**(Load cell 3mV/V)

Transfer mode: **Sigma - Delta**

A/D conversion speed: **120/240/480** times/sec.

Non-linearity: **0.01% F.S**

Gain drift: **10PPM/°C**

Display precision: **1/100000**

1.4.3 Digital:

Weight display: **128*32 0.91"** White light **OLED**

Minus display: **"-"**

Overload display: Voltage overlimit/underlimit

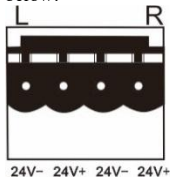
Decimal point: **5** types (optional)

Function keys: **4** keys soniferous keypad

2 Installation and Wiring

2.1 Connection of Power Supply

GM7702 weighing indicator connects with DC24V power supply as follows, which has two lines connecting ports. The correct wiring of the power terminal is shown in the figure below:

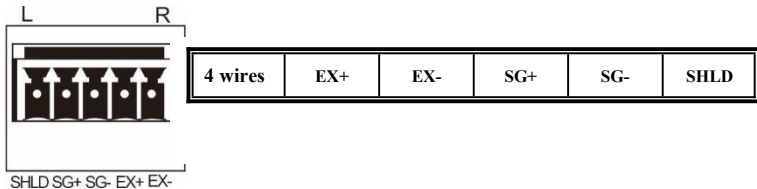


※ Please pay attention to the positive and negative polarity of the power supply, do not connect the reverse

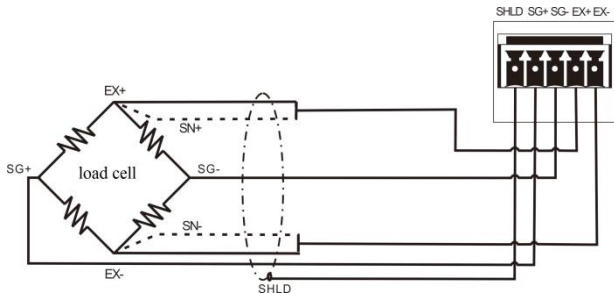
2.2 Connection of Load Cell

GM7702 weighing indicator connects with bridge type resistance strain gauge load cells by 4 wires. (When use 6-wired load cells, you must bridge the EX+ with SN+ and bridge the EX- with SN-.) It could connect with no more than 4 units load cell of 350Ω .

Each port of the load cell connection terminal is allocated as



2.2.1 Load Cell Connection



Note:

1. As load cell output signal is sensitive to electronic noise, the wiring should be shield cable and separate with other cables, especially AC power.
2. 4 wires connection is suitable for short distance and stable temperature or low precision field, otherwise use 6 wires connection.
3. For more load cells parallel connection, their sensitivity (mV/V) should be the same.

2.3 Connection of I/O Terminal

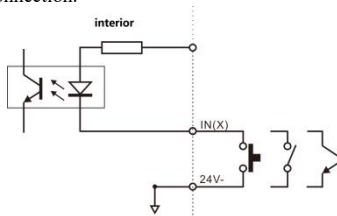
GM7702 weighing indicator has equipped with I/O module of 2 IN and 3 OUT. IN/OUT function user can self-define. To facilitate users wiring and some special applications, the default definition is as follows



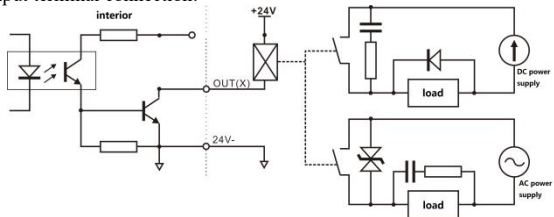
OUT3 OUT2 OUT1 IN2 IN1

Output		Input	
OUT1	stable	IN1	zero
OUT2	overlimit	IN2	tare
OUT3	set point 1		

Indicator input terminal connection:



Indicator output terminal connection:

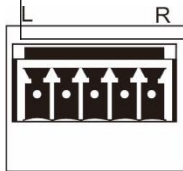


2.4 Serial Port Output

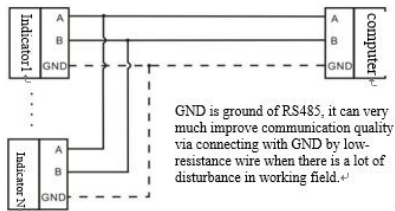
GM7702 weighing indicator possesses RS232 and RS485 serial port, which support Modbus-RTU protocol, r-SP1,r-Cont and Chi mei PT650D protocol.

Communication parameters:

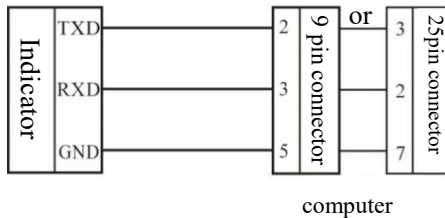
Item	Option	Description
1. serial port RS232 2. serial port RS485	ID No.	initial value: 01; range: 01-99.
	baud rate	initial value: 38400; option: 9600, 38400, 57600, 115200.
	data format	initial value: 8-E-1; option: 8-E-1, 8-O-1, 8-N-1, 7-E-1, 7-O-1.
	communication	Initial value: Modbus-RTU; option: Modbus-RTU, r-Cont, Modbus-RTU(2),Modbus-ASCII , PT650D.
	Modbus Hi-Lo	initial value: AB CD; option: AB CD(Hi-Lo), CD AB(Lo-Hi)
	sending interval	initial value: No interval; option: no interval, 10msec, 20msec, 50msec. data sending interval in r-Cont mode



The serial port interface definition diagram is shown on the left
RS485 Connection mode:



RS232 Connection mode:



2.5 Connection of Analog

There are two types of analog output:

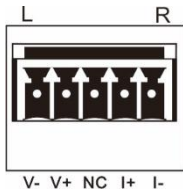
- 1) Voltage output: 0-5V, 0-10V.
- 2) Current output: 4-20mA.
- 3) User-define function: user can define analog output type and output range.

Analog parameter

Item	Option	Description
Working mode	4-20mA	Weight value could be converted to current of 4-20mA.
	0-5V	Weight value could be converted to voltage of 0-5V.
	0-10V	Weight value could be converted to voltage of 0-10V.
	user-defined current	User can define the current or voltage.
	user-defined voltage	
Min. output value	initial value: 00.000	To set min. analog output value. (The value will not change if the converted value smaller than set value.)

Zero output value	initial value: 00.000	To set analog output value of zero point weight value.
Max. capacity output value	initial value: 00.000	To set analog output value of max. capacity.
Max. output value	initial value: 00.000	To set max. analog output value. (It will not change if converted value bigger than set value.)

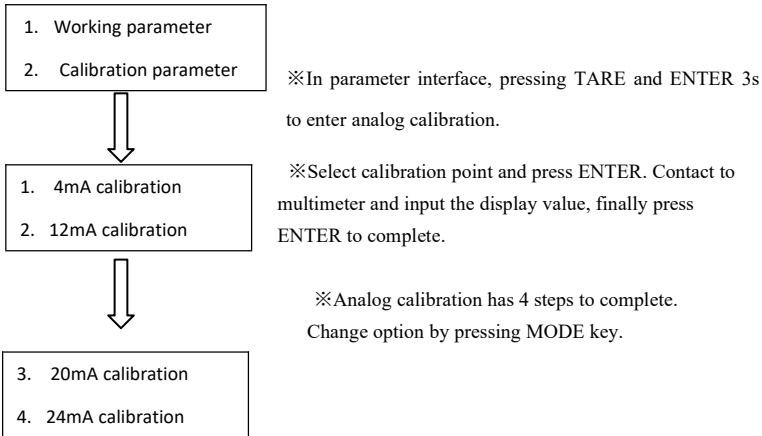
Analog output ports defined as below:



V+: Positive voltage output; **V-**: Negative voltage output

I+: Positive current output; **I-**: Negative current output

The indicator has been calibrated on the analog output when it leaves the factory, user no need to calibrate the analog output. If the analog output is abnormal, user can calibrate the analog output by himself (it is recommended to calibrate under the guidance of a professional). Calibration method (use a multimeter to connect the analog interface):



3 Data Input and Parameters

3.1 Parameters List

In the status of weighing, user could enter parameter interface by MODE key, and change item by TARE or MODE, then press ENTER to edit parameter.

Item No.	Parameter	Parameter item	Description
1	Working parameter	power-up zero	initial value: OFF (option: ON / OFF) To proceed zero judgment when power on.
		zero tracking range	initial value: 0. (range: 0~9d) Automatic judgment of zero point if weight value is within set time and range.
		zero tracking time	initial value: 1.0 (0.0~9.9s) Automatic judgment of zero point if weight value is within set time and range.
		stable range	initial value: 01. (range: 00~99d)

			Stable if weight value changes within set time and range.
		stable time	initial value: 1.0. (Range: 0.0~9.9s)
		zero range	initial value: 01 (1%~99% of full capacity) Zero range allowed.
		digital filter grade	initial value: 5 (Range: 0~9) Stronger filter grade, more stable weight value.
		stable filter grade	initial value: 0 (Range: 0~9) To proceed second filter on the base of digital filter.
		AD sample rate	initial value: 120 times /sec. (120/240/480 times/sec.)
		Tare memory ON/OFF	Initial value: OFF(ON/OFF optional) Restore the tare weight before the indicator is powered on

2	Calibration	unit	calibration parameters	
		decimal point		
		division		
		max. capacity		
		remote calibration ON/OFF		
		calibration with weight		
		calibration without weight		
3	Communication parameter	RS232	RS232/RS485 parameter setting: Including: ID no., baud rate, data format, communication protocol, MODBUS Hi-Lo, transfer interval (r-Cont mode)	
		RS485		
4	Control	control mode	weight control mode	

	parameter	parameter setting	control parameter setting	
5	Analog parameter	working mode	To set analog output mode	Can be set in user-defined mode
		min. output value	The value is displayed if analog is below this value.	
		zero point output value	Analog value when weight value is zero.	
		max. capacity output	The analog value matches with max. capacity value.	
		max. output value	The value is displayed if analog is over this value.	
6	I/O define		Define input and output ports.	
7	I/O test		Test input and output connecting ports	
8	Reset	reset working	Reset to factory defaults.	

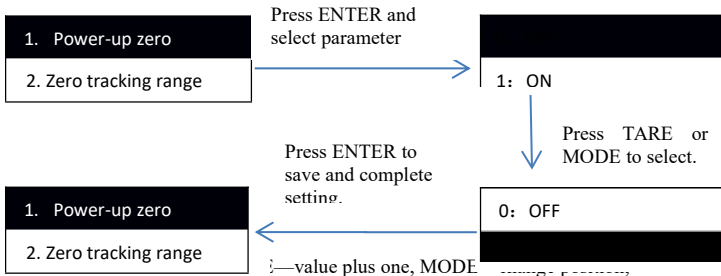
		parameter	
		reset serial port parameter	Reset to factory defaults.
		reset all parameters	Reset to factory defaults.(except analog parameters)
9	System info.	password	Password protection of all parameters or change password.
		language	Language version change. (Chinese / English)
		automatic lock screen	The indicator will lock screen automatically if there are not any operation during set time. (Option: OFF, 1 min., 2min., 5min. and 10min.)
		Indicator model	Set the indicator model (press ENTER to ENTER, adjust model with up and down selection keys.)
		version	Version information display

		compile information	Version compiles information display.
		test	Light on to check whether any damage on the screen or indicator light.

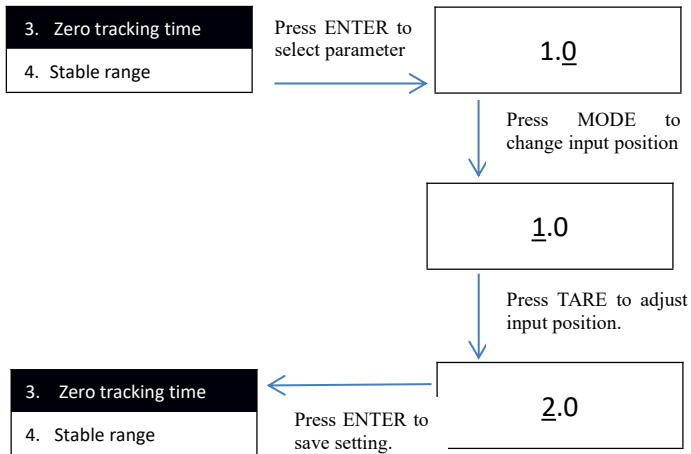
3.2 Data Input

Change or input of parameters value could be proceeding through 4 function keys.

Change of parameters: TARE—Upturn, MODE—Downturn, Enter—Confirm.



ENTER—confirm.



4. Calibration

4.1 Description

GM7702 indicator should proceed calibrated if the parameters can't meet users' requirement. Calibration can fix zero point and gain voltage.

User can make record of calibration parameter value, which could be used in calibration without weight.

4.2 Calibration Parameter

Calibration parameter	Parameter	Description
Unit	g; kg; t; lb	initial value: kg
Decimal point	0; 0.0; 0.000.000; 0.0000	initial value: 0.00
Division	1; 2; 5; 10; 50	initial value: 1
Max. capacity	\leq division * 100000	initial value: 10000
Remote calibration ON/OFF	OFF or ON	Calibration through serial port when set ON.
Calibration with weight	empty scale calibration	Press ENTER key and set present status as zero point.
	weight value 1	The weight value is base of the

	weight value 2	material.
	weight value 3	
	weight value 4	
Calibration without weight	zero calibration	Proceeding empty scale calibration and weight calibration if urgent.
	gain voltage calibration	
	gain weight calibration	

4.2.1 Empty Scale Calibration

To set empty scale as zero point

Weight:	2.100kg
Voltage:	1.843mV



Press confirm key

(to set present status as zero)

Weight:	0.000kg
Voltage:	1.843mV

Note:

- ※ The scale must be empty before pressing ENTER key.
- ※ Empty scale calibration can only completed when stable.
- ※ Please record voltage value displayed in empty scale status.
- ※ Long press TARE key for 3 seconds, can manually input millivolts for zero calibration without weight.

4.2.2 Weight Calibration

In order to meet the demands of multiple weight standards, user could set parameters of weight point 1, weight point 2, weight point 3, weight point 4, which are helpful to calibrate gain weight.

Weight:	0.000kg
Voltage:	0.000mV



Adding weight

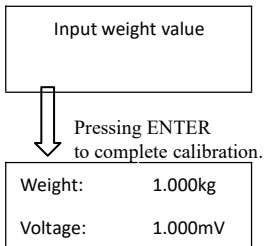
Weight:	0.302kg
Voltage:	1.000mV



Pressing ENTER

In status of empty scale, pressing confirm key to enter weight value 1, display weight and voltage will show 0.

Adding weights, also recording both weight value and voltage



Pressing MODE key could shift set point position. Press OPTION key could edit value.

Calibration completed.

4.2.3 Calibration without Weight

There is a certain error available for calibration without weight. If in urgent condition, please follow below operations.

Zero calibration	<div style="border: 1px solid black; padding: 10px; display: inline-block;">01.84<u>3</u></div>	Press zero calibration to enter zero millivolt manually interface, then input the millivolt of calibration with weight record and press ENTER to complete
------------------	---	---

Gain voltage calibration	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;">00.00<u>0</u></div>	Press gain voltage calibration to enter manually interface, then input the calibration with weight record and press ENTER to complete.
Gain weight calibration	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;">00.00<u>0</u></div>	Press gain weight calibration to enter manually interface, then input the gain voltage calibration value and press ENTER to complete.

4.3 Calibration Record

For calibration of weights, please record zero millivolts, gain millivolts and weights in the attached table. When it is inconvenient to load weights on site for system calibration, the data in the attached table can be used for the calibration without weights

Table:

Times	Zero millivolts (mV)	Gain millivolts (mV)	Weight	Date	Remark
1					

2					
3					
4					

5 Control Parameter

GM7702 has equipped with controlling external ON/OFF state parameters .controlling mode: upper/lower limit mode and set point mode.

Controlling parameters:

Mode	Parameters	Description	
Upper/Lower limit	output stable judgment	initial value: ON Whether limit output proceeded when stable.	
	min. duration	initial value: 0 ; range: 0-99.9S ;	
	upper limit value	initial value: 0. Valid when present weight value>upper limit value. (Define OUT port as upper limit)	Middle limit valid when lower limit<present weight<upper limit
	lower limit value	initial value: 0. Valid when present weight value<lower limit value. (Define OUT port as lower limit)	
Set point mode	set point 1 set point 2 set point 3	output stable judgment	initial value: ON Whether set point output when stable.

	set point 4	min. duration	initial value: 0 ; Range: 0-99.9S ;	
		comparing conditions	initial value: greater than or equal to. Option: greater than or equal to, less than or equal to, in the range or out of range.	
		preset value 1	initial value: 0 ;	※ The indicator will judge preset value 1 when the comparison condition is greater than or equal to, less than or equal to.
		preset value 2	initial value: 0 ;	

※Upper limit value must be greater than lower limit value.

※For example,

1. Select parameter: Upper/lower limit setting mode, stable judgment when output: ON; min. duration: 2s. Upper limit: 1000. Lower limit: 500.

I/O module definition: OUT1: upper limit. OUT2: middle limit. OUT3: lower limit.

Load weight meter output: Before the weight is stable, the external switch quantity maintains the state before the weight change; when the weight is stable, if the current weight is greater than 1000, the output port 1 is valid. In the effective 2S time, if the weight is reduced to 800 in stable, the output port 1 will continue to remain valid for 2 seconds , and the output port 2 will be valid.

6 I/O Module

6.1 I/O Module Define

GM7702 has equipped with 2 input ports and 3 output ports and could be defined freely.

I/O module parameters

Parameter	Define item	Description
IN-1 IN-2	0: no definition	When the input port is defined as the corresponding function, the trigger input port is valid and the function is executed.
	1: zero	
	2: tare	
	3: trigger set point 1	
	4: trigger set point 2	
	5: trigger set point 3	
OUT-1 OUT-2 OUT-3	6: trigger set point 4	When the output port is defined as the corresponding function, the trigger output port is valid.
	0: no definition	
	1: stable	
	2: overlimit	
	3: set point 1 output	
4: set point 2 output		
5: set point 3 output		

	6: set point 4 output	
	7: upper limit	
	8: middle limit	
	9: lower limit	

6.2 I/O Module Test

The purpose of I/O module test is to check whether the connection is correct.

I/O module test parameters

Parameter		Description	
IN-1	OFF	connect external switch correctly (DC 24V) When external trigger switch is valid, and input port parameter sets on, means connection is already.	If the input and output status is not valid as preset, check whether the wiring and power connections are correct.
IN-2	OFF		
OUT-1	OFF	connect external switch correctly (DC 24V) To press ENTER and set parameter ON. Output indicator light is on at the same time, means connect already.	
OUT-2	OFF		
OUT-3	OFF		

7. Password Management

Password function can protect indicator parameters and could be edit in system information parameter.

Password must set ON and input correct password when enter.

Initial password: 000000.

Parameter	Description
Password ON/OFF	option: ON, OFF. User has to input password if set ON.
Change password	There is 3 steps: 1) input original password 2) input new password 3) input new password again ※ Password input must be in accordance.

8. Serial Port Communication

GM7702 has optional RS232 or RS485 to connect with computer. It supports **r-Cont** protocol, **r-SP1** protocol, **Modbus-RTU** protocol, Chi mei PT650D protocol.

8.1 r-Cont Mode

Indicator will transfer data to computer automatically.

STX	ID no.	Channel no.	Status	Weight value	CRC	CR	LF
02	2 bytes	31	2 bytes	7bytes	2bytes	0D	0A

ID no. —— **2 bytes**, range: 01~99

Status —— **2 bytes**, High byte: 40H. Definition of low byte as below:

D6	D5	D4	D3	D2	D1	D0
null	null	G/N weight	positive/negative	zero	OFL	stable
fix: 1	fix: 0	0: G 1: N	0: P 1: N	0: NZ 1: Zero	0: Normal 1: OFL	0: unstable 1: stable

Weight value —— **7 bytes** without symbol, if overweight or underweight and then return, indicator will show **OFL**.

CRC —— **2 bytes**, check sum

CR —— **1 byte**, **0DH**

LF — 1 byte, **0AH**

For example,

Indicator is showing below data: **02 30 31 31 40 41 20 20 20 37 30 30 32 34 0D 0A**

Means present status: gross weight, stable, positive value, weight value is 700.

8.2 Modbus Protocol

The indicator communicates in RTU mode ,and each 8-bit byte is divided into 2 4-bit

hexadecimal character transmissions

Function code:

Function code	Definition	Description
03	read register	
06	write single register	
16	write multiple registers	Allow to write double registers only.
01	read coil	Unit: bit
05	write coil	

Exception code response

Code	Definition	Description
02	illegal data address	It means the data address received is illegal.
03	illegal data	The data wrote in is illegal.
04	indicator fault	Indicator fault when operation.
07	invalid	Order received is invalid.

8.2.1 Modbus Address

PLC addr.	Display addr.	Description
Read only register (function code: 0x03)		
40001	0000	present weight value (4 bytes with symbol)
40002	0001	
40003	0002	D0: stable D1: zero point D2: symbol D3: overflow D4: weight overlimit D5: weight underlimit D6: voltage overlimit D7: voltage underlimit

		D8: stable millivolt D9: net weight D10: beat state, 0-1 alternate switch, 1Hz	
40004	0003	gross weight value	
40005	0004		
40006	0005	net weight value	
40007	0006		
40008	0007	tare value	
40009	0008		
40010	0009	current weight (floating-point data)	
40011	0010		
40012	0011	gross weight (floating-point data)	
40013	0012		
40014	0013	net weight (floating-point data)	
40015	0014		
40016	00015	D0: over range when zeroing D1: unstable when zeroing	

		D2: overflow when zeroing D3: zero calibration is unstable. D4: zero voltage is too high. D5: zero voltage is too low. D6: gain voltage is unstable. D7: gain voltage is too large. D8: gain voltage is too low. D9: weight input is wrong. D10: calibration resolution is too low. D11: previous gain has not calibrated. D12: non weights for calibration	
40017	0016	gross weight(floating-point data)	
40018	0017		
40019-40020	0018-0019	Reserved (Allow to read value: 0)	
Read & Write (write function code: 0x06, 0x10; read function code: 0x03.)			
40021	0020	unit: (0:g, 1:kg, 2:t,3:lb)	
40022	0021	decimal point (0: 0 digit, 1: 1 digit, 2: 2 digits, 3: 3 digits, 4: 4 digits)	
40023	0022	division (1/ 2/ 5/ 10/ 20/ 50)	
40024	0023	max. capacity, write range (max. capacity \leq division*100000)	
40025	0024		

40026	0025	zero calibration with weight: write non-zero data and calibrate zero point with present weight value, read absolute millivolt of present load cell	
40027	0026		
40028	0027	gain point 1 calibration with weight, $0 \leq \text{weight value} \leq \text{max. capacity}$	
40029	0028		
40030	0029	gain point 2 calibration with weight, gain point $1 \leq \text{weight value} \leq \text{max. capacity}$	
40031	0030		
40032	0031	gain point 3 calibration with weight, gain point $2 \leq \text{weight value} \leq \text{max. capacity}$	
40033	0032		
40034	0033	gain point 4 calibration with weight, gain point $3 \leq \text{weight value} \leq \text{max. capacity}$	
40035	0034		
40036	0035	zero calibration without weight: input zero millivolt. write range (load cell: 3mV/V , range: $0\text{-}12.000\text{mV}$): read zero point millivolt of calibration	
40037	0036		
40038	0037	gain calibration without weight, gain millivolt input ($0.000 < \text{millivolt} < 15.000\text{mV}$ -zero point millivolt)	write in sequence to complete calibration
40039	0038		
40040	0039		
40041	0040	gain calibration without weight; input gain weight value $\leq \text{max. capacity}$	
40042-40050	0041-0049	Reserved (allow to read value: 0)	

40051	0050	auto-zero when power-up ON/OFF(0: OFF, 1: ON)
40052	0051	zero point tracking range (0-9d)
40053	0052	zero point tracking time (0-9.9s)
40054	0053	stable range (1-99d)
40055	0054	stable time (0-9.9s)
40056	0055	zero range (0%-99%)
40057	0056	digital filter parameter (0-9)
40058	0057	stable filter level (0-9)
40059	0058	AD sample rate: 0: 120 times/sec., 1:240 times/sec., 2:480 times/sec.
40060	0059	control mode (0: upper and lower limit mode, 1: preset point mode)
40061	0060	Indicator model 1 st unit (“0” - “9” , “-” , “A” - “Z”)
40062	0061	Indicator model 2nd unit (“0” - “9” , “-” , “A” - “Z”)
40063	0062	Indicator model 3rd unit (“0” - “9” , “-” , “A” - “Z”)
40064	0063	Indicator model 4th unit (“0” - “9” , “-” , “A” - “Z”)
40065	0064	Indicator model 5th unit (“0” - “9” , “-” , “A” - “Z”)
40066	0065	Indicator model 6th unit (“0” - “9” , “-” , “A” - “Z”)
40067	0066	Tare memory ON/OFF (0: OFF, 1:ON)

40068-40070	0067-0069	Reserved (allow to read value: 0)	
40071	0070	whether judge stable before output (0: OFF, 1: ON)	upper limit & lower limit mode
40072	0071	min. duration (0-99.9s)	
40073	0072	upper limit value (0-99999)	
40074	0073		
40075	0074	lower limit value (0-99999)	
40076	0075		
40077-40080	0076-0079	Reserved (allow to read value: 0)	
40081	0080	Preset point 1 judge stable? (0: No, 1: Yes)	
40082	0081	preset point 1 min. duration time (0-999:0-99.9s)	
40083	0082	preset point 1 comparison condition (0: greater or equal to, 1: smaller or equal to, 2: within the range, 3: outside the range)	
40084	0083	preset point 1, preset value 1	
40085	0084		
40086	0085	preset point 1, preset value 2	
40087	0086		
40088-40090	0087-0089	Reserved (allow to read value: 0)	
40091	0090	preset point 2 judge stable? (0: No, 1: Yes)	
40092	0091	preset point 2 min. duration time (0-999:0-99.9s)	

40093	0092	preset point 2 comparison condition (0: greater or equal to, 1: smaller or equal to, 2: within the range, 3: outside the range)
40094	0093	preset point2, preset value 1
40095	0094	
40096	0095	preset point 2, preset value 2
40097	0096	
40098-40100	0097-0099	Reserved (allow to read value: 0)
40101	0100	Preset point 3 judge stable? (0: No, 1: Yes)
40102	0101	preset point 3 min. duration time (0-999:0-99.9s)
40103	0102	preset point 3 comparison condition (0: greater or equal to, 1: smaller or equal to, 2: within the range, 3: outside the range)
40104	0103	preset point 3, preset value 1
40105	0104	
40106	0105	preset point 3, preset value 2
40107	0106	
40108-40110	0107-0109	Reserved (allow to read value: 0)
40111	0110	preset point 4 judge stable? (0: No, 1: Yes)
40112	0111	preset point 4 min. duration time (0-999:0-99.9s)
40113	0112	preset point 4 comparison condition (0: greater or equal to, 1: smaller or equal to, 2: within the range, 3: outside the range)

40114	0113	preset point 4, preset value 1	
40115	0114		
40116	0115	preset point 4, preset value 2	
40117	0116		
40118-40120	0117-0119	Reserved (allow to read value: 0)	
40121	0120	IN-1 define	If write 2 in address 0120 (IN-1), means to define IN-1 as tare function.
40122	0121	IN-2 define	
40123	0122	OUT-1 define	
40124	0123	OUT-2 define	
40125	0124	OUT-3 define	Write 1 in 0125 address to enter I/O module test.
40126	0125	test status	
40127	0126	input test	
40128	0127	output test	
40129-40150	0128-0149	Reserved (allow to read value: 0)	
40151	0150	zero / clear tare	read & write address write:1 (zero in gross weight status, clear tare in net weight status) read: 0
40152	0151	tare	
40153	0152	IN-1 status	read only address: 1: valid-status
40154	0153	IN-2 status	

40155	0154	OUT-1 status	2: invalid-status
40156	0155	OUT-2 status	
40157	0156	OUT-3 status	
40158	0157	preset point 1 status	
40159	0158	preset point 2 status	
40160	0159	preset point 3 status	
40161	0160	preset point 4 status	
40162	0161	upper limit status	
40163	0162	middle limit status	
40164	0163	lower limit status	
Read & Write (function code of read: 0x01, function code of write:0x05)			
00000	0000	zero / clear tare	read & write address: write:1 (zero in gross weight status, clear tare in net weight status) read: 0
00001	0001	tare	
00002	0002	IN-1 status	read only address: 1: valid-status 2: invalid-status
00003	0003	IN-2 status	
00004	0004	OUT-1 status	
00005	0005	OUT-2 status	
00013	0012	OUT-3 status	

00014	0013	preset point 1 status	
00015	0014	preset point 2 status	
00016	0015	preset point 3 status	
00021	0020	preset point 4 status	
00022	0021	upper limit status	
00023	0022	middle limit status	
00024	0023	lower limit status	
00025~00032	0024~0031	Reserved (allow to read value: 0)	

8.3 Modbus RTU、Modbus ASCII protocol

PLC Address	Protocol Address	Description	Remark
Four byte read-only region (Supported function code: 03)			
40001	0000	Weight Value	Four byte signed No. (As a complement) When AD is wrong: 0x7F455252 (lower 3 bytes are E,R,R) When the weight overflows:
40002	0001		

			0x7F4F464C (lower 3bytes are O,F,L)
40003	0002	Status	bit0: 0 Unstable/ 1 Stable bit1: 0 Normal / 1 OFL bit2: 0 None Zero/ 1 Zero bit3: 0 positive/ 1 Negative bit4: 0 AD Normal / 1 AD wrong bit5~bit31: 0 (standby)
40004	0003		
40005	0004	Reserved	The reserved bit data is fixed as 0x7F+'R'+ 'E'+ 'V'
40006	0005		
40007	0006	Reserved	The reserved bit data is fixed as 0x7F+'R'+ 'E'+ 'V'
40008	0007		
40009	0008	Reserved	The reserved bit data is fixed as 0x7F+'R'+ 'E'+ 'V'
40010	0009		
40011	0010	Reserved	The reserved bit data is fixed as

40012	0011		0x7F+'R'+'E'+'V'
40013	0012	Reserved	The reserved bit data is fixed as 0x7F+'R'+'E'+'V'
40014	0013		
40015	0014	Reserved	The reserved bit data is fixed as 0x7F+'R'+'E'+'V'
40016	0015		
40017	0016	Weight value	Current Weight Value
40018	0017		
40019	0018	Reserved	The reserved bit data is fixed as 0x7F+'R'+'E'+'V'
40020	0019		
40021	0020	Reserved	The reserved bit data is fixed as 0x7F+'R'+'E'+'V'
40022	0021		

40023	0022	Reserved	The reserved bit data is fixed as 0x7F+'R'+'E'+'V'
40024	0023		
40025	0024	Status bit	Symbol: bit0: 0 Unstable/ 1 Stable bit1: 0 Normal / 1 OFL bit2: 0 None Zero/ 1 Zero bit3: 0 positive/ 1 Negative bit4: 0 AD Normal / 1 AD wrong Bit5~bit31: 0 (standby)
40026	0025		
Two byte read/write region (Supported function code: 03, 06)			
40101	0100	digital filter grade	The initial value, range and specific meaning of each parameter are explainedSee chapter 4
40102	0101	stable range	
40103	0102	stable time	
40104	0103	zero-tracking range	

40105	0104	zero tracking time	
40106	0105	zero range	
40107	0106	unit	
40108	0107	decimal point digit	
40109	0108	division	
Four byte read/write region (Supported function code: 03, 16)			
40201	0200	Max. capacity	write range \leq division \times 100000
40202	0201		
40203	0202	weight zero calibration	Write non - zero value pair for zero calibration. Read as the current absolute millivolt number (fixed 3-bit Decimal point)
40204	0203		
40205	0204	weight gain	Write weight value to perform gain

40206	0205	calibration	calibration. The number of millivolts (signed) read out as relative zero (for complement, fixed 3 decimal points)	
40207	0206	No weight zero calibration	The number of millivolts written to the zero position. Read as the current zero millivolt number (fixed at 3 decimal places).	
40208	0207			
40209	0208	The number of millivolts of gain written when the gain is calibrated without weight	Read as (gain millivolt during calibration)(fixed 3 decimal points)Read as (gain weight value during calibration)	Both commands must be written to complete the gain calibration
40210	0209			
40211	0210	The weight value written when the gain is calibrated without weight		
40212	0211			
Byte only (Supported function code: 01)				
00301	0300	Stable marker	0: Unstable; 1: stable	
00302	0301	OFL marker	0: Normal; 1: overflow	

00303	0302	Zero marker	0: Non-zero; 1: zero
00304	0303	Positive and Negative marker	0: Positive; 1: Negative
00305	0304	AD wrong marker	0: AD Normal ; 1: AD Wrong
Byte read/write (Supported function code: 01, 05)			
00401	0400	Zero calibration	Write operation: write 1, zero calibration; Write 0, no operation Read operation: read as 1, the device is in zero state Read as 0, the device is in a non-zero state
00402	0401	Reserved	Write: invalid and returns address error message Read operation: read as fixed 0
00403	0402	Reserved	Write: invalid and returns address error message Read operation: read as fixed 0
00404	0403	Reserved	Write: invalid and returns address error message Read operation: read as fixed 0

00405	0404	Zero	Write operation: write 1, zero calibration; Write 0, no operation Read operation: read as 1, the device is in zero state Read as 0, the device is in a non-zero state
00406	0405	Reserved	Write: invalid and returns address error message Read operation: read as fixed 0
00407	0406		
00408	0407		
00409	0408		
00410	0409		
00411	0410		
00412	0411		
00413	0412	System restart	Write operation: write 1, system restart; Write 0, no operation Read as: 0
00414	0413	Reset to defaults	Write operation: write 1, restore factory Settings; Write 0, no operation Read as: 0

00415	0414	Modbus Hi-Lo byte mode selection	Write operation: write 1, low byte mode Write 0, high byte mode Read operation: read as 1, currently in low byte mode Read 0, currently in high byte mode
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8.4 Chi mei PT650D Protocol

Protocol descriptions as follow:

Protocol choose **PT650D**, data frame format adjusted to **7-E-1**, Baud rate adjusted to **9600**.

Under this protocol, data is output by **ASCII** code, data format is as follows:

Returns a description of the data frame format:

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

Note:

No.1, 2——Status 1:

OL: overload; **ST:** stable display; **US:** unstable display

No.3—— “,” 2C (HEX)

No.4, 5——Status 2:

NT: Net Weight; **GS:** Gross Weight

No.6—— “,” 2C (HEX)

No.7—— “+”: positive; “-”: negative

No.8-14——weight value: if no decimal point, **output a space at No.8**; overflow state readout value is **999999**

No.15-16——Unit: **g, kg, t, lb**

No.17-18——control code: **CRLF**

9 Dimension

