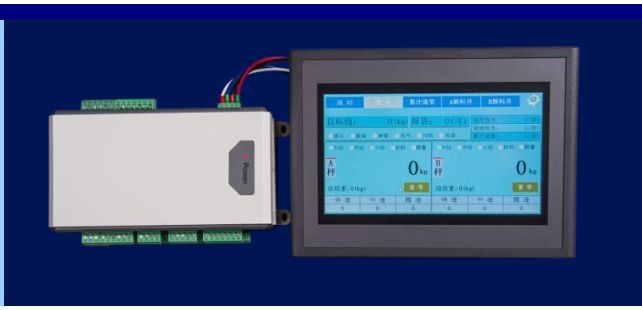
Multifunctional programmable weighing controller

DS822-A8KTF(AX00)

operation instruction

DINGSONG



(Chinese version V1.1.2)

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Menu

I. Introduction

DS822-A8KTF(AX00) is a dual-scale split programmable weighing controller, which can be connected to two weighing sensors at the same time. The host is installed by standard guide rail, which can be directly connected to the touch screen as man-machine interface, or connected to the display panel produced by our company. This controller has the characteristics of multifunction, high precision, high reliability and user programmability.

Figure 1.1 Physical drawing of main engine and man-machine interface accessories

Hardware resources and functions

(1) 10 common switch input points, which can receive the following signals:
Passive switch, button, relay output
Or NPN PNP transistor switch input
DC voltage signal, voltage range 6-24V

(2) One high-speed pulse input port, which can be connected with high-speed pulse input and can also be used as a common switch input point.

(3) 18 relay outputs, contact capacity: AC220V,5A or DC30V,5A

(4) Two high-precision conversion AD channels can be connected to two load cells at the same time, which can be used as double scales.

(5) Two communication interfaces

One is RS485 interface, which is fixed to the standard Modbus RTU protocol with baud rate of 38400, and can be connected to the display panel produced by our company or other brands of touch screens.

The other path can be connected with RS485/RS232 signals. Communication mode, address and baud rate can be set. Top loose protocol, standard Modbus RTU protocol and multiple continuous transmission modes can be selected. It can communicate with computers, PLC and other equipment.

(6) 1 channel large screen output interface (multiplexed with high-speed pulse input port, and only one function can be selected at the same time)

It can be connected to one or two large-screen monitors produced by our company, and the transmission distance can reach more than 1000 meters.

(7) Flexible and reliable programmable function, suitable for a variety of applications, users can make secondary programming, which can be finished in simple and convenient way.

At the same time, it can realize the protection of users' intellectual property rights.

main performance index

(1) A/D input signal range: -20mV~+20mV (the sensitivity of the sensor can reach up to 4mV/V)

(2) Internal resolution of A/D: 1/1 million

(3) A/D conversion speed: 100 times per second

(4) A/D nonlinearity: <0.003%FS

(5) Gain drift: 2PPM/℃(TYP)

(6) Sensor power supply for bridge: DC5V (current > 200mA, up to 12 350Ω sensors can be connected)

(7) Power supply: Wide voltage AC100-240V,50-60Hz

(8) Service temperature: -10℃～40℃

(9) Relative humidity: <90%

(10) Overall dimension of main engine: 176 × 85 × 71

(11) Dimension of display panel: 160 × 85 × 30

II. Structural dimensions of main engine and accessories

2.1 Installation Dimension Drawing of Host

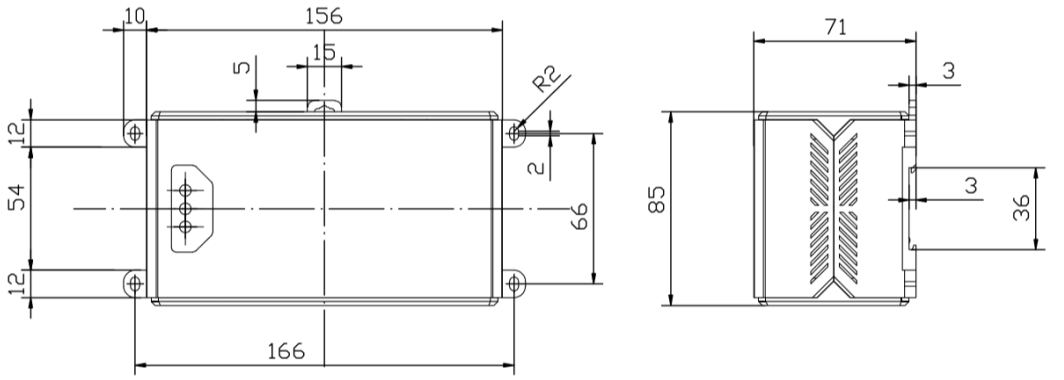


Figure 2.1 installation dimension of main engine

2.2 Installation dimension drawing of display panel

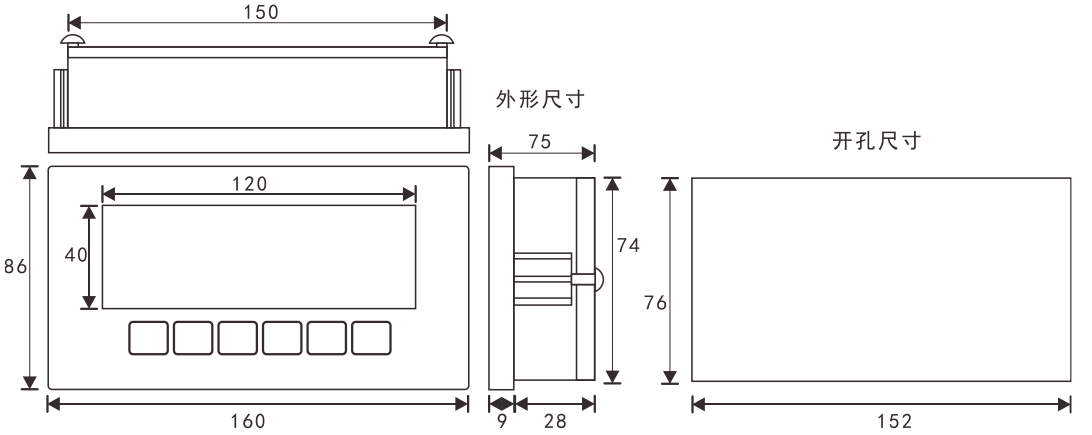


Figure 2.2 installation dimension of display panel

2.3 installation dimension drawing of touch screen (7 inches)

Figure 2.3 installation dimension of touch screen

III. Interface Layout of Host and Accessories

3.1 Interface layout of instrument host

The terminals of the instrument host are distributed on the AB side of the upper and lower sides. The a side is the display and switch input interface, while the B side is distributed with other interfaces, such as switch output port, power input port, high-speed pulse input port, weighing sensor interface, full function communication port, etc.

3.1.1 a side of instrument host panel

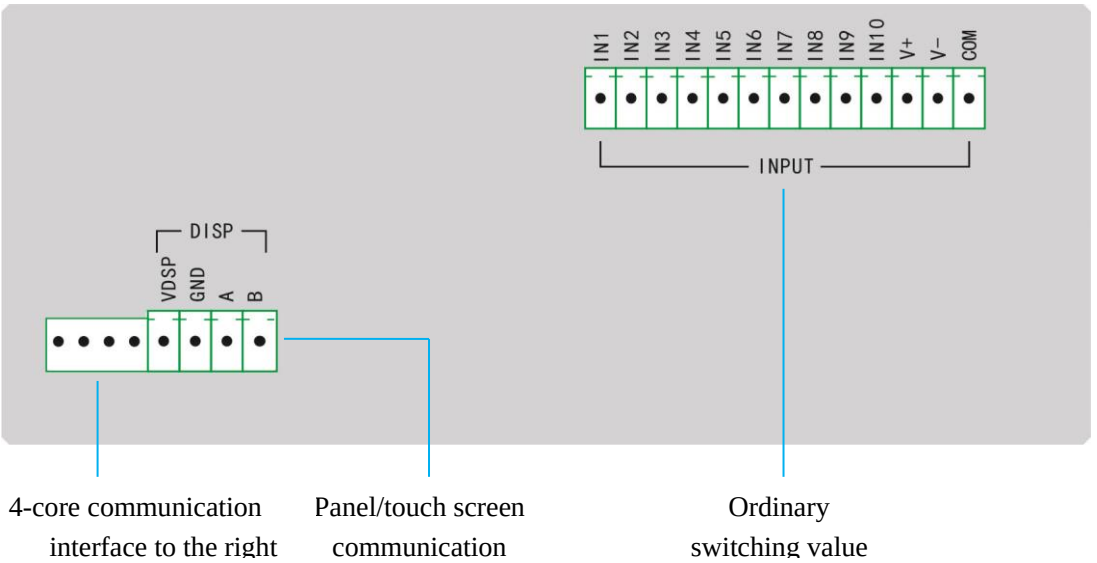
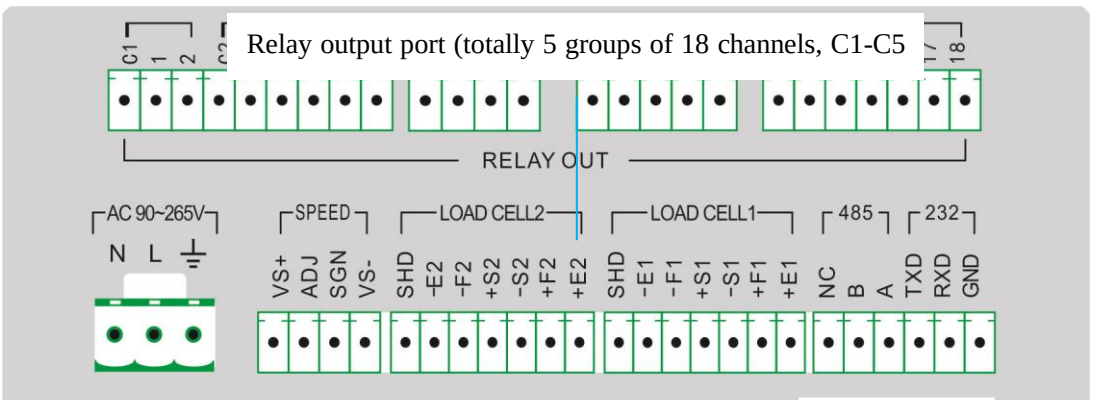


Fig. 3.1 function diagram of a side of host panel

3.1.2 B side of instrument host panel



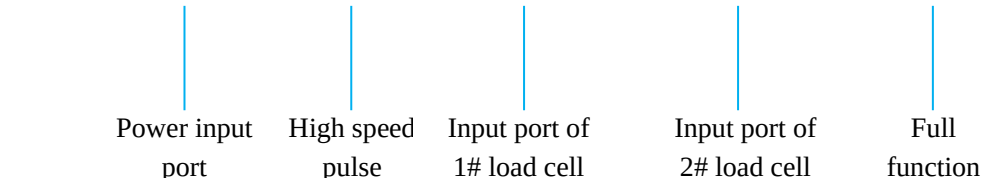


Figure 3.2 function diagram of B side of host panel

3.2 Display panel function layout

The host can be connected to the display panel produced by our company as the man-machine interface. The display panel is double row LED display with 6 independent setting keys.There are two stability indicators, two rows of input and output indicators.

Front display panel (2.1)

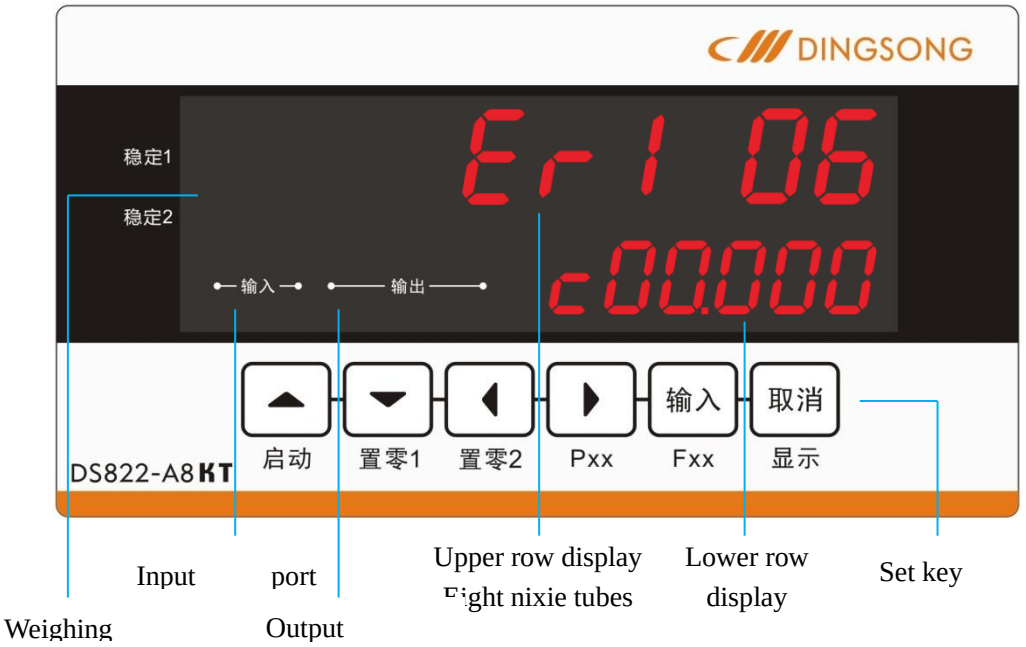
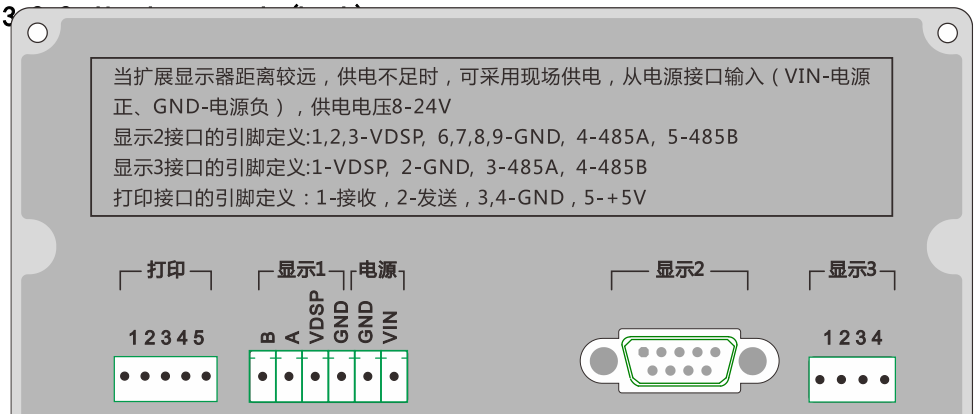


Figure 3.3 function diagram of display panel (front)



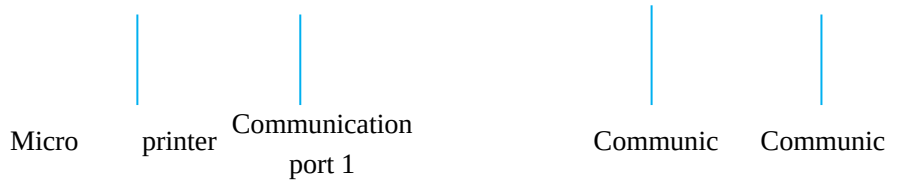


Figure 3.4 function diagram of display panel (back)

Note: the functions of the three display communication ports are completely equivalent. A communication line is provided with the factory, and the two ends can be connected to the display 3 interface of the display panel and the left side of the disp interface of the host computer, without the user's wiring.The user can also choose the appropriate interface.

IV. Connection method of instrument port

4.1 Connection method of common switch input port

input	Optocoupler isolation switch value	The instrument has 10 channels of common switch input (in1-in10). The common terminal com is not connected to any electrical node in the instrument, and the power supply positive (+ V) and power negative (- V) are led out internally. According to different needs, the common terminal can be connected to + V or - V or not.Each input port can be connected with button, trigger switch, relay contact point, proximity switch, etc,DC voltage signal (6-24 V) can also be input. See the figure below for specific common connection method

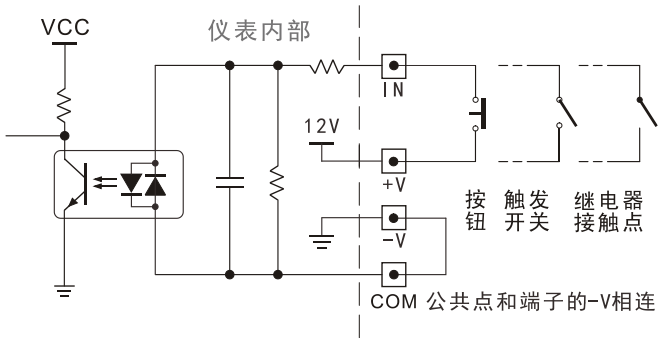


Figure 4.1 schematic diagram of switch input connection

Note: The common point COM in the figure can also be connected with+V. At this time, one end of the button should be connected with-V. You can choose different connection methods according to your needs.

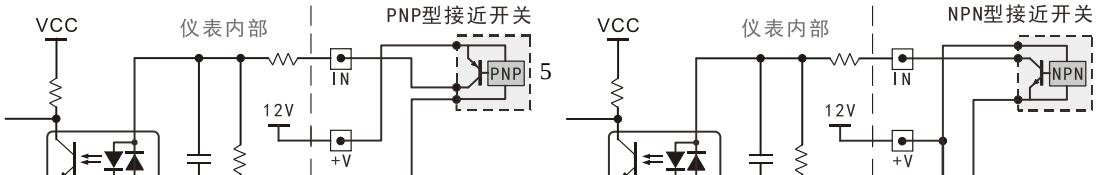


Figure 4.2 Schematic diagram of PNP proximity switch connection Figure 4.3 Schematic diagram of NPN proximity switch connection

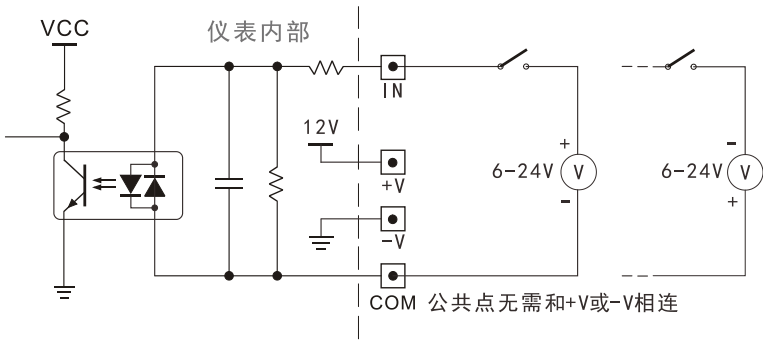


Figure 4.4 Schematic diagram of DC voltage signal input connection

4.2 Connection method of switch output port

output	relay	A total of 18 outputs (1-18), contact capacity: AC220V/DC30V,5A. It can be directly connected to low-power resistive loads and low-power AC/DC inductive loads (such as AC contactor and DC contactor). See the following figure for the wiring method. If the load power is large, please relay in series to prevent the instrument from being damaged.

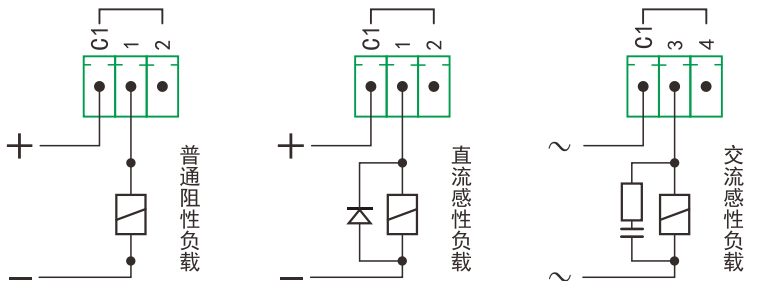
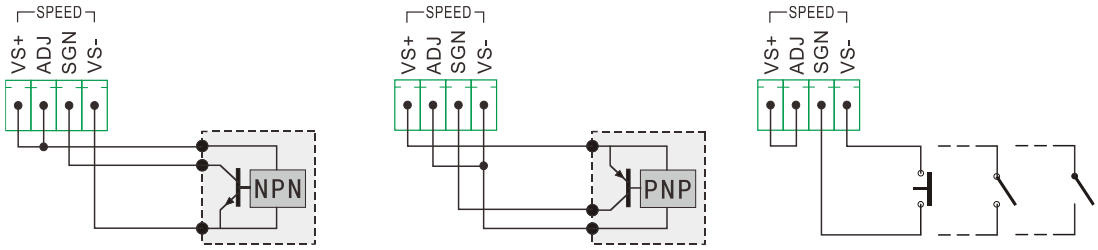


Figure 4.5 Schematic diagram of relay output connection

4.3 Connection method of high-speed pulse input port

input	High speed	This instrument has a high-speed pulse input port (SPEED), which is electrically isolated by a high-speed optocoupler. This port

t	pulse	can be connected with an external speed sensor. It can also be used as a common switch input port. See Section 7.2 for details.

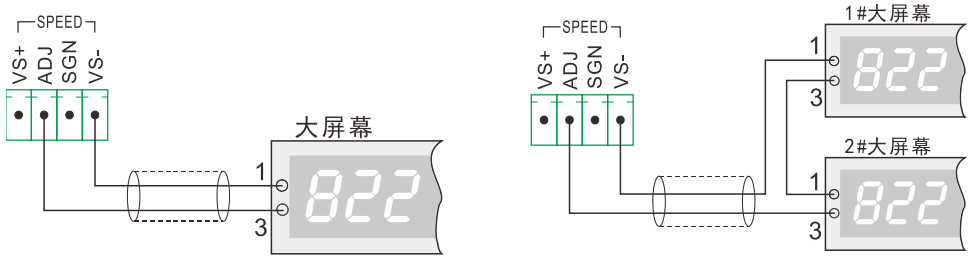


NPN型测速传感器　　PNP型测速传感器　　作普通开关量输入口用

Figure 4.6 Schematic diagram of connection of high-speed pulse input port

4.4 Connection method of large screen display

output	Communication current loop	This instrument can be connected to one or two large-screen displays. It should be noted that this interface is multiplexed with the high-speed pulse input port (SPEED), and only one function can be selected at the same time. The factory defaults to high-speed pulse input. If you want to use this function, you must first set the parameter F32. See Section 7.2 for details.



连接1个大屏幕　　连接2个大屏幕

Figure 4.7 Schematic diagram of connection of large screen display

Note: Two large screens can also be connected in parallel, for example, the two input lines of two large screens can be connected in parallel in the left figure.

4.5 Connection method of load cell

input	weighing cell	This instrument has two high-precision AD channels, which can be connected to two weighing sensors at the same time and used as a double scale. The output arch bridge voltage of the instrument is DC5V, the excitation current is > 200mA, and it can be connected to at most 12 350Ω weighing sensors, with the signal input range of -20mV~+20mV, and the sensitivity of the connected sensors can reach up to 4 mV/V. 6-wire connection or 4-wire connection is optional. See the following table for the meaning of sensor interface.

4.5.1 Label and function of load cell interface

serial number	1# sensor grade	2# sensor grade	Corresponding function
1	+E1	+E2	Positive excitation voltage (positive supply bridge)
2	+F1	+F2	Feedback voltage positive (4-wire connection method and arch bridge positive short circuit)
3	-S1	-S2	Output signal negative
4	+S1	+S2	Output signal positive
5	-F1	-F2	Negative feedback voltage (4-wire connection method and negative short circuit of arch bridge)
6	-E1	-E2	Negative excitation voltage (negative supply bridge)
7	SHD	SHD	Shielding end

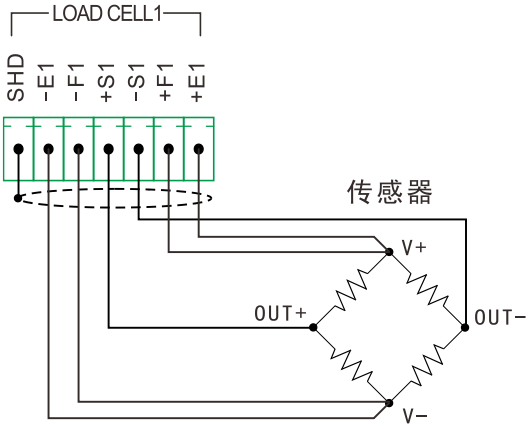
Table 4.1 Label and function of load cell interface

4.5.2 6-wire connection method of load cell

In order to increase the stability of the weighing signal at a long distance, the instrument and the sensor can be connected with a 6-wire system (long-line compensation mode), and the sensor should adopt a 6-core shielded wire, and it should be wired separately from the lines with strong interference (power equipment wiring, etc.) and AC lines. (see figure 4.8 below)

4.5.3 Four-wire connection method of load cell

If the distance is close, 4-wire connection method can be adopted. At this time, "E+" and "F+", "E-" and "F-" must be shorted on the interface terminals of the host sensor respectively. If it is not short-circuited, the instrument will not work normally, even sometimes it seems to work normally on the surface, but it will actually produce a big error, so it must be connected strictly according to Figure 4.9.



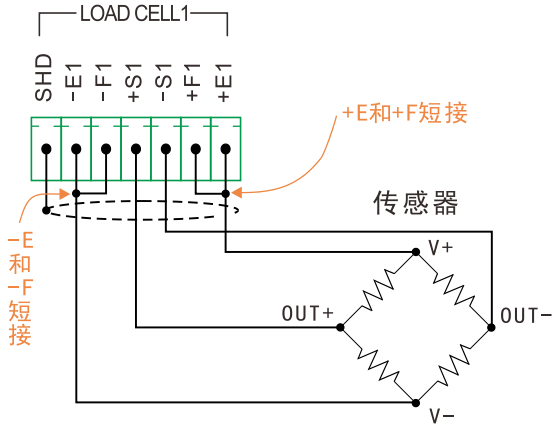


Figure 4.8 6-wire connection method of load cell Figure 4.9 4-wire connection

method of load cell

Note: In the above two figures, sensor 1# is taken as an example, and the connection method of sensor 2# is the same.

4.6 Connection method of communication interface

such asSection 3.1As shown in the interface layout of the instrument host, there is a communication port on both sides A and B of the instrument host.

1#通信口:RS485　　2#通信口:RS232+RS485

Figure 4.10 Schematic diagram of two communication interfaces of the instrument

The 1# communication port on the surface A is RS485 interface, which is fixed to the standard Modbus RTU protocol with baud rate of 38400, and can be directly connected (without any setting) to the display panel produced by our company or the touch screen sold by our company.

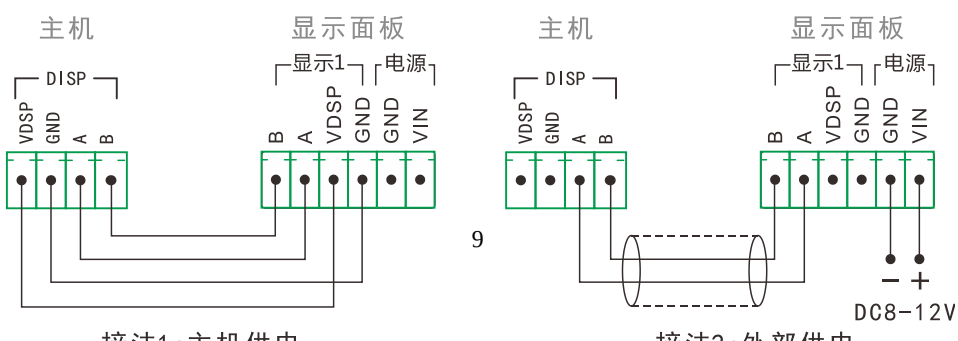
B 2# communication port is a full-function communication port compatible with RS485 and RS232 at the same time. The communication mode, address and baud rate can be set. Top loose protocol, standard Modbus RTU protocol and a variety of continuous transmission modes can be selected. It can communicate with computers, PLC and other devices.

Note: When the 2# communication port is set to Modbus RTU protocol, it has the same function as the 1# communication port.

Note: The first interface NC on the left of 2 # communication port is not connected to any electrical node, and can only be used in special occasions.

4.6.1 Connection Method of Host and Display Panel

There are also two connections to the host display panel. The first one supplies power to the host, as shown in connection 1 below. If the distance between the display panel and the host computer is far, connection 2 can be adopted at this time, and the external power supply is used, and the power supply voltage is 8-12V DC.



接法1:主机供电　　接法2:外部供电

Fig. 4.11 Connection Method between Host and Display Panel

4.6.2 Connection method between host and touch screen

The instrument can directly supply power to the touch screen, or it can be externally supplied if the distance between the touch screen and the host is far. Please refer to the relevant information of the touch screen for the power supply voltage range and connection method.

V. Parameter setting

5.1 Function and operation of setting buttons on the display panel

such asFigure 3.3As you can see, there are 6 independent setting buttons on the display panel. Each button has two names and performs different functions in different situations. Each key has two operations: short press and long press. When a key is pressed, the buzzer will sound short, and then releasing the key is short press. If you press and hold a key for more than 2 seconds,It is a long press when the buzzer is released after a long sound. If it is still not released at this time, it will enter the button continuous operation mode. The functions of the six setting buttons are as follows:

serial number	Key diagram	Key name	function	remarks
1		【↑】	Set the current menu item to flip up. Set the target number plus 1	
		[start]	Start the selected process Press long to indicate [Stop] to exit the process.	See relevant process information for details.
2		【↓】	Set the current menu item to flip down. Set the target number minus 1.	
		[Set to zero 1]	1# scale is set to zero or calibrated to zero.	See. 8.3Section/6.1festival
3		【←】	Set the currently selected number to	

			move left.	
		[Set to zero 2]	2# Scale is set to zero or calibrated to zero Long press indicates [Clear] to clear the accumulated amount.	See. 6.1festival See. 8.3festival
4	▶ Pxx	【→】	Set the currently selected number to move to the right.	
		【Pxx】	Long press to enter the p parameter setting.	See. Section 5.5
5	输入 Fxx	[input]	Confirm the current parameter setting	
		【Fxx】	Long press to enter f parameter setting.	See. Section 5.4
6	取消 显示	[Cancel]	Exit the current parameter setting.	
		[display]	Press and hold to display the secondary display content.	See section 7.5 for details.

Table 5.1 Function Description of Setting Keys of Display Panel

Note: Description of displaying and setting key operation.

(1) The parameter setting in this chapter refers to the operation on the display panel produced by our company, and the touch screen operation is described separately.

(2) The "weighing display state" in this chapter refers to the default state that the instrument has not entered any menu after being powered on.

(3) The key operations in this chapter are uniformly expressed by big square brackets [] and key names, such as [Enter] and [Pxx].

Unless otherwise specified, key operation refers to short press. If it is long press, it will be marked, such as long press [Fxx].

(3) In this chapter, the corresponding digital tube displays are uniformly displayed with small square brackets [] and display contents, such as [d 010]

(4) Display panel digital tube display comparison table

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T	U	Y
A	b	c	d	E	F	9	H	I	J	K	L	n	n	o	P	r	S	t	U	Y

Table 5.2 Display Comparison Table of Digital Tube in Display Panel

5.2 Introduction of instrument parameters

This instrument has two sets of parameters: F parameter and P parameter. The meaning of F parameter is fixed, and it is the internal working parameter and operation item of the instrument. See for details. Section 5.5.2. The P parameter corresponds to the variables of the instrument workflow, and its visibility, password control and corresponding meaning are all determined by the workflow.

See the corresponding workflow data for details.

Press and hold the [Fxx] key for viewing and setting F parameters, and press and hold the [Pxx] key for viewing and setting P parameters. See the introduction of the following sections for specific operation methods.

5.3 Password control and permitted operation items

This instrument is controlled by password. After the instrument is powered on, the initial state is no login. Some operations of this instrument can only be carried out after logging in with corresponding passwords. There are three levels of passwords, namely, user (User-1), administrator (User-2) and manufacturer (User-3). You can operate the corresponding functions by logging in with different passwords, and the privilege levels of these three passwords increase in turn. The operation items that allow password login at this level also increase in turn. See the following table for details:

serial number	Operation item	Login password level			
		No login	user	administrator	factory
1	Zero and tare operations	√	√	√	√
2	And view and modify non-regulatory p parameters.	√	√	√	√
3	And view and modify control p parameters.	×	√	√	√
4	View and modify f parameters	×	√	√	√
5	Check the second display content.	×	√	√	√
6	Weighing	×	√	√	√
7	Process start and stop	×	√	√	√
8	Initialize instrument	×	√	√	√
9	Set a timed shutdown.	×	×	√	√
10	Setting input and output ports	×	×	√	√
11	Consistency calibration	×	×	×	√

Table 5.3 Comparison of Password Levels and Operating Items

Note: √ indicates the permitted operation items under password login at this level, and × indicates the impermissible operation items.

Note: Some items are realized by F parameter, and the corresponding parameters can only be displayed after logging in the password of this level.

Note: If the highest bit of F parameter F22 is set to 0 (the factory default value is 1), the user's (User-1) level permission will be automatically obtained without login, that is, the items marked orange × in the above table can be operated without login.

5.4 Operation steps of password login

The specific operation steps of password login are as follows:

button	Lower row display	Upper row display	meaning
【Fxx】	[F00]	[PP-----]	In the weighing display state, press and hold the [Fxx] key for a long time, and the lower row will flash. If you have logged in, the lower row displays [F01]. If you need to switch the login level, you can press the 【↓ 】 key and select the parameter F00. If you enter the current password again, you will enter the password change function. See Section 7.5 for details.
[input]	[F00]	[PP-----]	The top row flashes the rightmost digit.
direction key	[F00]	[PP----1]	Enter the corresponding password, factory default value: user password [-1], administrator password [59565], manufacturer password, dynamic uncertainty.
[input]	[F00]	[USEr-1]	According to the unused password, the corresponding login prompt is displayed, which indicates that the login is successful. If the input password is wrong, [,err,,] will be displayed, and after 1 second, it will automatically exit and enter the weighing display state.

Table 5.4 Specific Operation Steps of Password Login

Note: After the power is turned on again, you will automatically log out of the login state. If you need to operate the corresponding items again, you need to log in again. If you need to log out of the logged-in state, you can also take the initiative to power off and restart the instrument.

Note: The password of the manufacturer (User-3) is dynamic. If necessary, please contact us for information.

5.5 F parameter setting and lookup table

5.5.1 Step of parameter setting

(1) in the weighing display state, according to theSection 5.4Introduce the method of login (skip this step if you have already logged in).

(2) Press and hold the [Fxx] key for about 2 seconds, and the lower row of the instrument will display [F01] and the upper row will display [D, ＊＊＊]. You can select different parameters by pressing the [↑] [↓] key to operate, and the lower row will display the current F parameter number in a flash.

(3) After the corresponding parameters are selected, press the [Enter] key again to enter the corresponding parameter modification operation. At this time, the lower row does not blink, but the parameter content in the upper row blinks, which can be modified by the four keys [←] [→].

(4) After the modification, press [Enter] to confirm the completion of the setting, and press [Cancel] to abandon the current item setting and exit to the previous menu.

Note: For some parameters, users can completely enter their own set values, while for others, they can only select the built-in fixed parameters through [↑] [↓], and users can judge whether the parameter values displayed in the upper row are flashing or not.

5.5.2 F parameter table

Lower row display	Upper row display	meaning
[F00]	[PP -----]	Prompt for login password, see section 5.4 for details.
[F01]	[d 010]	Grading value (01,02,05,10,20,50,100 optional)
[F02]	[P 0]	If the number of decimal places (0-4 optional) of the weight exceeds, the error code [Error ,08] will be displayed.
[F03]	[30090]	The full-scale value of the scale (factory default value: [,,030090])
[F04]	[r-o X.Y]	0-cAnnot bESEttoZEro 1-1%2-2%3-5%4-10% 5-20% 6-50% ≥7-100% X-AUto-ZEroInG rAnGE At PoUEr-on (PErcEnt AGE oFt HE FULL-ScALE uALUE oFt HE ScALE) Y-tEY ZEro SEttInG rAnGE (PErcEnt AGE oFt HE FULL ScALE uALUE oFt HE ScALE) For example, setting it to "2.5" means that the range of automatic zero setting at power-on is 2%, and the range of key zero setting is 20%. The factory default setting is "1.1"
[F05]	[r-A 0.5]	Zero tracking range (setting range: 0.0 ~ 9.9 division values)
[F06]	[nodE 02]	Communication mode, see Section 7.1 for details
[F07]	[Adr 01]	Communication address (1-26 optional), in continuous transmission mode, it means to select the content to be sent

Quick reference table of group F parameters (continued 1)

Lower row display	Upper row display	meaning	
[F08]	[038400]	2. Baud rate of communication port (600120018002400480096001920038400576001152 00 optional)	
[F09]	[FLt 0.0]	1. Scale filter coefficient (0-9 optional, the larger the number, the deeper the filter) After pressing [input], the filter coefficient of [flt-2,0] is displayed After pressing [Enter], it will display [uint, 00.0], and this parameter is for standby	
[F10]	[rt 0.2]	Stability determination time (1.0 s is recommended)	
[F11]	[rF 01]	Stable range (1 is recommended) The larger the value is, the more unstable the weighing is, such as the livestock scale	
[F12]	[cAL-1]	Weighing calibration (see Chapter 6 for details)	
[F13]	[**.****]	Test sensor output signal Switch the two groups of sensors through the [→] key The display [1 * *. * *] indicates the millivolts of the first group of sensors The display [2 * *. * *] indicates the millivolts of the second group of sensors	See section 8.1 for details
[F14]	[tESt-dSP]	Display test	
[F15]	[o-000000]	Test output port	
[F16]	[tSt-PSUL]	Test pulse input port	
[F17]	[d **.**.**]	current date	
[F18]	[t **.**.**]	current time	
[F19]	[LInE **]	Set workflow number (factory default 00 means none) 1-14 corresponding to the fixed process listed in the manual No.15 is an empty process. Note: 1-6 is the fixed process of instrument and cannot be modified. 7-15 can receive user written process through serial port. Please refer to relevant process information for details	
[F20]	[dSP1 ***]	In weighing state, display the contents on the upper row of the display panel Press [Enter] to display [KP1,, * *], indicating the content of sub display in the lower row See section 7.5 for details.	

[F21]	[dSP2 ***]	In the weighing state, the contents displayed in the lower row of the display panel are displayed Press [Enter] to display [KP2,, **], indicating the content of sub display in the lower row See section 7.4 for details
[F22]	[LH *****]	[LH AbcdE] A: Select how to obtain user (user-1) level permissions (1) Short circuit main serial port (NC) and (RXD), (0) password login B: Whether it is allowed to set the formula number (0 - not allowed, 1 - allowed), see relevant information E: (1) remove accumulated control, (2) automatically compensate temperature drift or creep
[F23]	[A-oUt 1]	Non functional instrument
[F24]	[A-oUt 2]	Non functional instrument
[F25]	[A-In]	Non functional instrument
[F26]	[tSt- rAn]	Test ram, see section 8.1 for details

Quick reference table of group F parameters (continued 2)

Lower row display	Upper row display	meaning
[F27]	[no]	Non functional instrument
[F28]	[SSIo --]	Test communication port, see section 8.1 for details
[F29]	[A8**]	The version number is displayed, and other relevant contents are displayed in the order of input
[F30]	[r-cAL]	See calibration results / calculation method weight calibration: After pressing [Enter], the lower row displays [tar-1], and the upper row displays the tare weight of No. 1 scale After pressing [input], the lower row displays [,,, R-1], and the upper row displays No. 1 scale coefficient After pressing [Enter], the lower row displays [tar-2], and the upper row displays the tare weight of No. 2 scale Press [R] to display the upper and lower row scales See Section 6.2 for details
[F31]	[InIt 0]	Used to initialize the instrument, see Section 8.5
[F32]	[d-oF]	Special functions (such as input and output position adjustment, etc.) | See section 7.6 for details
[F34]	[tSt- bcd]	Press input, display [B-H*], set to 0: BCD code output, Set to 1: binary code output, set to 2: BCD code reverse output Set to 3: reverse output of binary code(only for instruments with BCD output)

		Press input and display [BCD * *] to enter BCD code output self-test
[F36]	[Pro9]	Manual input process No.6, if you need this function, please contact us for details
[F37]	[rdP1 000]	1. Large screen output Press [Enter] to display [rdp2 000] and set 2 "large screen output content The factory default value is 0, which means there is no output. See section 7.2 for details

5. Speedometer

5.5 P parameter setting

Enter the following steps to set the parameters:

(1) Press and hold the [Pxx] key for about 2 seconds, the lower row of the instrument will flash [p * *], and the upper row will display [,, * *], (the specific content depends on the process).Different parameters can be selected for operation by pressing the key [↑], [↓]. At this time, the label of the current f parameter will flash in the lower row.

(2) After selecting the corresponding P parameter, press the [Enter] key again to enter the corresponding parameter modification operation. At this time, the lower row does not flicker, while the upper row parameter content flashes, which can be modified by the four keys of [↑], [↓], [→].

(3) After modification, press the [Enter] key to confirm the completion of the setting, or press [Cancel] to abandon the setting of the current item and exit to the previous menu.

Note 1: some parameters are set as control parameters by the processSection 5.4The method described in this paper is to log in first. If you have already logged in, all P parameters that can be set will be displayed automatically.

Note 2: for the specific meaning of P parameter, please refer to the corresponding process information.

VI. Weighing and calibration of instruments

When the instrument is used for the first time or after using for a period of time, the weighing error is large, so it is necessary to carry out weighing calibration.The instrument can be calibrated in kind, and the calculation method can be used in some cases where the physical calibration cannot be carried out.If it is the initial calibration, the user needs to set the f parameters related to weighing before entering the formal calibration step,The parameters involved are:

serial number	F parameter	Default value	meaning	remarks
1	F01	10	Division value	
2	F02	0	Decimal places of weight	
3	F03	030090	Scale full scale value	
4	F04	1.1	Zero range	
5	F05	0.5	zero trace	
6	F09	1.0	Filter coefficient	
		1.0	2. Filter coefficient of scale	
7	F10	0.2	Determination of stable time	
8	F11	1.0	Judging the scope of stability	

Table 6.6 related weighing parameters

6.1 Physical calibration

The physical calibration is divided into two steps. The first step is zero point calibration, and the second step is loading point calibration.Weighing calibration operation is a user-1 level or above project, you must use the corresponding password to log in.

The operation of zero point calibration is completed directly through the panel buttons [reset 1] [set to zero 2]. If you do not log in with a password, the following operations are performed manually.The specific steps are as follows:

button	Lower row display	Upper row display	meaning
	[******]	[******]	Make sure that there is no weighing material on the scale
[Set to zero 1]	[******]	[0]	The upper row displays 0, indicating that the zero point calibration of 1 9 scale is successful If it is to calibrate the zero point of scale 2, press [zero 2]

Table 6.2 steps of zero point calibration

After performing the above operation, the user can place the material object (weight or material) with known weight in the appropriate position on the scale body, and then perform the loading point calibration according to the following steps:

button	Lower row display	Upper row display	meaning
【Fxx】	[F01]	[d ***]	In the weighing display state, press and hold the [FXX] key, and the lower row will flash. If the lower row displays [F00]. Then enter the password above the administrator level, log in first, and then perform this step again
Press and hold	[F12]	[CAL-1]	Press and hold continuously to locate F12
[input]	[F12]	[CAL-1]	Cal-1 is flashing in the upper row, indicating that the loading point calibration is carried out for the 1 9 scale. If you want to flash the scale in the upper row
[input]	[F12]	[000000]	When loading, the scale will flash on the right
direction key	[F12]	[001000]	Input the weight of the object through the direction key. Here, take 1000 as an example
[input]	[***]	[1000]	1. Scale calibration is successful

Table 6.3 steps of loading point calibration

6.2 Calculation method calibration

The calibration of calculation method can be completed by parameter F30. The calibration coefficient of the parameter is obtained by theoretical calculation method, and the calculation formula is as follows:

Calibration factor = sum of sensor range / sensor sensitivity coefficient

The sum of sensor ranges refers to the cumulative sum of all sensor ranges on the scale, and the units used are consistent with those used in calibration. If three 10 ton sensors are used, the sensitivity coefficient is 2.0mv/v, and the calibration value is 1kg, then the calibration coefficient is 3×10000÷2.0 = 15000

The specific steps are as follows:

button	Lower row display	Upper row display	meaning

【Fxx】	[F01]	[d ***]	In the weighing display state, press and hold the [FXX] key, and the lower row will flash. If the lower row displays [F00]. Then enter the password above the administrator level, log in first, and then perform this step again
Press and hold	[F30]	[r-cAL]	Press and hold [↑] continuously to quickly locate F30.
[input]	[tArE-1]	[0000000]	Set the tare weight of scale 1#.
direction key	[tArE-1]	[0000100]	Take 100 as an example
[input]	[r-1]	[010000.0]	Set the calibration coefficient of scale 1#.
direction key	[r-1]	[011000.0]	Take 11000.0 as an example.
[input]	[tArE-2]	[0000000]	Set the tare weight of scale 2#.
direction key	[tArE-1]	[0000200]	Take 200 as an example.
[input]	[r-1]	[010000.0]	Set the calibration coefficient of 2# scale.
direction key	[r-1]	[012000.0]	Take 12000.0 as an example.
[input]	[F30]	[r-cAL]	Calculation method calibration is set successfully.

Table 6.4 Steps of Calculation Method Calibration

Note: Tare refers to the tare value of the empty scale. When the empty scale display is not 0, this parameter can be directly modified. If the current empty scale display is 300, then add 300 to the original value. In those situations where the scale can't be zero-calibrated, you can record the last tare value, and then directly input the setting.

Note: You can also record the calibration coefficient after the last physical calibration and directly enter the setting.

VII. Setting of other working parameters

7.1 Parameter setting and protocol of full-function communication port

The 2# communication port is a full-function communication port, and the communication mode, address and baud rate can be set. It supports top-loose protocol, standard Modbus RTU protocol, multiple continuous transmission modes, etc.

The F parameters involved are F06 (communication mode), F07 (communication address) and F08 (communication baud rate). Please refer to the specific setting method. Section 5.5. Communication mode F06 determines the protocol currently used by this communication port. See the following table for details.

Protocol type	Communication mode F06	Communication data format			remarks
		data bit	Check digit/mode	Stop bit	
Top loose agreement	0	7-bit ASC code	1-bit/even check	1	The protocol is command response. When F06 = 3, check word (chk) is not checked when receiving data. See Appendix 1 for details
	1	7-bit ASC code	1 bit / odd check	1	
	2	8-bit ASC code	No check	1	
	3	7-bit ASC code	1-bit/even check	1	
Continuous transmission mode	4	7-bit ASC code	1-bit/even check	1	Send every 35ms See Appendix 2 for details
	5	7-bit ASC code	1 bit / odd check	1	
	6	8-bit ASC code	No check	1	
Serial port printout	8	8-bit ASC code	No check	1	Input busy signal is high (common)
	9	8-bit ASC code	No check	1	The input busy signal is low
Modbus RTU	10	8	1-bit/even check	1	See Appendix 3 for register function table
	11	8	1 bit / odd check	1	
	12	8	No check	Two	
	13	8	No check	1	

7. Communication table 1

7.2 High-speed pulse input port as large screen output port

If any parameter of 1 g large screen output content rdp1 and 2 ◌ɔ large screen output content rdp2 under f37 parameter of f parameter is not 0, the high-speed pulse port is switched to the large screen output port, and the original high-speed pulse input or ordinary switch input function is disabled. Rdp1 and rdp2 can be set as follows:

serial number	parameter	show contents	serial number	parameter	show contents
1	001	Variable P01	6	100	1. Gross weight
2	……	……	7	101	1. Net weight
3	090	Variable P90, 2# Gross Weight	8	102	1# tare weight
4	091	Variable P91, 2# net weight	9	111	Control stepping motor
5	092	Variable P92, 2# tare weight	10	112	As a common output port (only for model A8KT)

Table 7.2 Parameters and Contents of Large Screen Output Variables

The output port is a current loop, which can be connected to 1-2 large screens. When connecting two large screens, you can either use the series connection method or the parallel connection method. See the wiring method for details. Section 4.4. When using the company's big screens, if two big screens are connected, each big screen can automatically identify its corresponding display variables (see the instruction manual for the setting of the serial number of the big screen), so as to realize the functions of displaying 1# variable on the 1# big screen and 2# variable on the 2# big screen, such as one gross weight and one net weight.

7.3 High-speed pulse input port shall be a common input port.

Without switching to the function of large-screen output port, the high-speed pulse port can be used as a common input port IN11 without any settings. Because the two signal input terminals (ADJ, SGN) inside the high-speed pulse port are suspended, the state of the input port after power-on is random. Just press Section 4.3 After the correct external input is connected, the status is normally available.

7.4 Modify the login password

And the passwords of users and administrators can be modified, while the passwords of manufacturers are dynamic and cannot be modified. As long as you log in for the second time with the correct password, you can enter the password modification interface. The specific steps are as follows:

button	Lower row display	Upper row display	meaning
【Fxx】	[F01]	[d ***]	In the weighing display state, press and hold the [Fxx] key for a long time, and the lower row will flash. If [F00] is displayed in the lower row. Then enter the password to modify the level, log in first, and then do this step again.
【↓】	[F00]	[PP-----]	Select login again.
[input]	[F00]	[PP-----]	After pressing the enter key, the rightmost bar in the upper row flashes.
direction key	[F00]	[PP----1]	Enter the corresponding password (take the factory default user password as an example).
[input]	[F00]	[n1-----]	In the new password input interface, the rightmost bar in the top row flashes.
direction key	[F00]	[n1*****]	Enter a new password for the first time through the arrow keys.
[input]	[F00]	[r1-----]	In the new password input interface, the rightmost bar in the top row flashes.
direction key	[F00]	[r1*****]	Through the arrow keys, enter the new password again to verify the consistency.
[input]	[F00]	[ok1]	OK1 is displayed, indicating that the user password has been successfully modified. After displaying for 1 second, it will automatically exit to the weighing display state. If it is inconsistent with the password entered for the first time, the previous step will still be displayed.

Table 7.3 Modification Steps of Login Password

Note: The second login must be the same level password, otherwise it will switch between different login levels, and you cannot enter the password modification interface.

Note: If you forget your login password, please contact us for relevant operation information.

7.5 Settings of panel display content

The panel display is double-row digital tube display, the specific content of which can be set freely, and the F parameters involved are F20 and F21. DSP1 in parameter F20 corresponds to the upper row main display, KP1 corresponds to the upper row auxiliary display, DSP2 in parameter F21 corresponds to the lower

row main display, and KP2 corresponds to the upper row auxiliary display. All four parameters can be set to the following:

serial number	parameter	show contents	serial number	parameter	show contents
1	000	The main display shows 0/ the auxiliary display does not show.	5	100	Process executor status
2	001	Strain P01	6	101	Cumulative times
3	……	……	7	102	Cumulative weight
4	099	Strain P99	8	103	Current weight

Table 7.4 shows variable parameters and contents.

If nonexistent content is set, [---] will be displayed.

Note: Sub-display refers to the contents displayed on the display panel when the [Display] key is pressed and held in the weighing display state.

Note: Whether it is the primary display or the secondary display, the configuration in the workflow takes a higher priority. If the process is set, the settings of parameters F20 and F21 are invalid after the process is started (they are still valid when the process is stopped).

Note: If the password of User-1 or above is logged in, there is a fixed second display in the lower row, which indicates the working state of the current process executor, which is convenient for process debugging. The secondary display and the second secondary display are switched in turn every time the [Display] key is pressed.

7.6 Timed shutdown function

The timed shutdown function belongs to the project above the level of administrator (User-2), and the corresponding F32 parameter appears only after logging in with the corresponding password. The following steps assume that you have logged in correctly:

button	Lower row display	Upper row display	meaning
【Fxx】	[F01]	[d ***]	In the weighing display state, press and hold the [FXX] key, and the lower row will flash. If the lower row displays [F00]. Then enter the password above the administrator level, log in first, and then perform this step again
Press and hold	[F32]	[d-oF]	Press and hold [↑] continuously to quickly locate F32.

[input]	[F32]	[dAY 1366]	Enter the timing days setting, and the rightmost digit in the upper row flashes.
direction key	[F32]	[dAY 100]	Set the number of scheduled days (take 100 days as an example here) 1-1365 is optional, and 1366 means infinite length (i.e. there is no scheduled shutdown function).
[input]	[F32]	[Y1 0]	express
[input]	[F32]	[Y2 0]	
[input]	[F32]	[Y3 0]	
[input]	[F32]	[Y4 0]	Said whether to enter the input and output adjustment settings, select 0 here.
[input]	[F32]	[d-oF]	Set up.

Table 7.5 Operation Steps of Timed Shutdown Function

Note: The following functions are not available once the scheduled shutdown arrives:

Note 2: to turn off the timed shutdown function, that is, to set the day in the above table to 1366

7.7 Input and output position adjustment

Under normal circumstances, the number of the input and output ports in the instrument corresponds to the identification on the panel of the host. In some special cases, such as the input and output ports corresponding to the working process are damaged, but the host has idle input and output ports, the mapping relationship between the internal number and the external display identification can be modified by using the I / O position adjustment function,The instrument can be used continuously without modifying the process.

This function belongs to the project of the administrator (User-2) level or above, and it is in the same F parameter F32 as the scheduled shutdown function set in Section 7.6. When setting the Y4 parameter, it can be changed to 1, and the function can be entered. The following steps assume that the user has successfully logged in and entered the F32 modified project (if not, please refer to the steps in Section 7.4):

Input position adjustment step table

button	Lower row display	Upper row display	meaning
[input]	[F32]	[Y4 0]	Said whether to enter the input and output adjustment settings.
【↑】	[F32]	[Y4 1]	Select 1 here to enter this function.

[input]	[F32]	[In1 1]	Re-map input port 1, for example, if it is set to 2, it will be mapped to IN2.
[input]	[F32]	[In2 2]	Remapping input port 2
[input]	[F32]	[In3 3]	Remapping input port 3
[input]	[F32]	[In4 4]	Remapping input port 4
[input]	[F32]	[In5 5]	Remapping input port 5
[input]	[F32]	[In6 6]	Remap input port 6
[input]	[F32]	[In7 7]	Remapping input port 7
[input]	[F32]	[In8 8]	Remap input port 8
[input]	[F32]	[oUt 1 1]	Re-map output port 1, for example, if it is set to 2, it is mapped to OUT2.
[input]	[F32]	[oUt2 2]	Remapping output port 2
[input]	[F32]	[oUt3 3]	Remap output port 3
[input]	[F32]	[oUt4 4]	The remapping output port 4
[input]	[F32]	[oUt5 5]	Remap output port 5
[input]	[F32]	[oUt6 6]	The remapping output port 6
[input]	[F32]	[oUt7 7]	The remapping output port 7
[input]	[F32]	[oUt8 8]	The remap output port 8
[input]	[F32]	[oUt9 9]	The remap output port 8
[input]	[F32]	[oUtA A]	The remap output port 10
[input]	[F32]	[oUtb b]	The remapping output port 11
[input]	[F32]	[oUtc c]	The remap output port 12
[input]	[F32]	[d-oF]	Set up.

Table 7.6 Operating Steps of Input/Output Position Adjustment Function

VIII. Instrument testing and other operations

8.1 Instrument test function

This instrument has rich testing functions, which is convenient for on-site debugging and use. All the test functions of are implemented in the F parameter. Please refer to Section 5.5 for how to access this parameter. The specific items tested are as follows:

serial number	test item	show	operating procedure
F13	sensor Millivolt number test	[**.****]	Test the millivolts of the sensor output signal, and switch the two groups of sensors with the → key to test the change and quality of the sensors. [1 **.****] is displayed, indicating the millivolts of the group 1 sensor. [2 **. ***] is displayed, indicating that there are no sensors in the 2nd group. If there is an error code, please refer to Section 8.2 for the corresponding treatment method.
F14	Nixie tube Led display	[tESt-dSP]	Press [Enter], and the meter will automatically test the LED and nixie tube display. Scroll the display visually, and judge the display failure.
F15	relay delivery outlet	[o-000000]	Press [Enter], enter the output port to be tested, and you can test a single one. You can also test more than one. Enter [o-00002] if the output No.2 is tested; For test No.123, enter [o-000123], then press [Enter], the corresponding output port will act, and the indicator light on the front panel will light up at the same time, then press after the test. [Cancel] to exit the test.
F16	High speed pulse input port	[tSt-PSUL]	Press [Enter] to display [a 000000]. At this time, input a signal at the pulse input port, and the meter will display the measured pulse number. Press after the test. [Cancel] to exit the test.
F26	Internal RAM	[tSt- rAn]	Press [Enter], and [good ram] will be displayed if there is no fault. Otherwise, [bad ram] is displayed.

F28	2# communication port	[SSIo --]	The detection method is to short the two signal lines RXD and TXD of RS232 communication, and the display: [ssio 1-] indicates that RS232 communication is normal. Connect the capacitor of 0.1uF between two signal lines A and B of RS485 communication, and the display: [ssio -2] indicates that RS485 communication is normal.

Table 8.1 Table of Test Function Items

8.2 Instrument power-on self-test and fault display code

After the instrument is powered on, the relevant information of the instrument will be displayed first. The upper row of the display panel displays the instrument model and software version number, and the lower row displays the version date. Then, the internal self-test of the instrument starts. If any error is found, the error code number will be displayed. Multiple errors will be displayed for a certain time in turn, and then the normal working cycle will be started. If the process number is set,The correspond workflow will be automatically started.

Inside this instrument, there is a button cell to save the working state before power failure, and these states will be recalled after power-up. For workflow, after power-on, the process controller will perform a power-on trigger function, and if the process has corresponding operations, it will be executed.

After the power supply is turned on, if all the following conditions can be met, the instrument will perform a weight zero setting, which is to set zero for startup:

(1) The workflow is not in the control state of feeding or discharging.

(2) The weight can collect stable data within 6 seconds after power-on.

(3) The weight value is within the range of starting and zeroing (see F parameter table F04).

8.2.1 Boot failure code

During the self-test of the instrument after power-on, the following error codes may be displayed:

serial number	Code display	Fault meaning	processing method
1	[EPr 1]	Internal RAM failure	Repair in factory
2	[EPr 2]	Power failure detection fault	Check whether the input voltage is normal.
3	[EPr 3]	Loss of internal RAM data	Check whether the button cell on the motherboard is dead.
4	[EPr 4]	Loss of internal ROM data	Repair in factory
5	[EPr 5]	Internal program data error	Repair in factory
6	[EPr 20]	Internal clock	Check whether the button cell on the

		error	motherboard is dead.

Table 8.2 Boot Fault Display Codes

8.2.2 Fault codes in normal operation

During the use of the instrument, the following fault codes may also be displayed:

serial number	Code display	Fault meaning	processing method
1	[Err 03]	Weight overload	Check the load, sensor, or calibration coefficient on the scale.
2	[Er1 06]	1# sensor failure	Check 1# sensor, main line, terminal connection line and junction box.
3	[Er2 06]	2# sensor failure	Check 2# sensor, main line, terminal connection line and junction box.
4	[Err220]	Undervoltage power supply	Check the supply voltage

Table 8.3 Fault display codes in use

8.3 The instrument weight is set to zero and the total accumulated quantity is cleared.

8.3.1 Set the instrument to zero manually.

After the instrument has been used for a period of time, due to various reasons, the zero point may shift to a certain extent, so it is necessary to manually reset the zero point. In the absence of any level password, the weight range of reset operation needs to meet the requirements of parameter F04. The specific operation steps are as follows:

button	Lower row display	Upper row display	meaning
[Set to zero 1]	[***]	[***]	In the normal weighing state, wait for the weight to stabilize (the stabilizing light is always on). Press [Set to zero 1]
	[***]	[0]	(This is assuming that the gross weight/net weight of scale 1# is displayed in the upper row)

Table 8.4 Operating Steps of Manual Zero Setting

Note: If it is unstable or the current weight exceeds the zero setting range, zero setting is invalid.

Note: After the zeroing operation is successfully completed, the current tare value corresponding to the corresponding scale number will also be zeroed.

Note: After logging in the password of user (User-1) or above, the zeroing

range is unlimited, and the zeroing operation at this time is equivalent to The zero point is calibrated.

Note: The above figure shows the manual zeroing operation of scale 1#. If you want to operate scale 2#, press [zeroing 2] according to the above steps.

8.3.2 Cumulative amount of clearance

In some workflows, cumulative quantity may be displayed. If you need to clear the current cumulative quantity, you can do the following:

button	Lower row display	Upper row display	meaning
[clear]	[ ]	[SUrE 0]	In the normal weighing state, press and hold [Zero 2] for more than 2 seconds.
【↑】	[ ]	[SUrE 1]	1, indicating that the operation of clearing cumulant is selected.
[input]	[***]	[*****]	The accumulated amount will automatically return to the weighing state.

Table 8.5 Operation Steps of Clearing Cumulative Amount

8.4 Start and Exit of Process

By default, the flow number parameter F19 of the instrument is 00, indicating that there is no working flow. Users need to set the corresponding workflow number to meet their own requirements before the instrument can enter the corresponding working cycle. Users can choose the fixed workflow built into the instrument, or burn it into the instrument through the serial port through computer software. (See related information of process for details)

Under normal circumstances, if the process number is set, after the instrument is powered on and started, the workflow will be started automatically without manual intervention. However, in some debugging situations, it may be necessary to start or stop the workflow manually. This function belongs to user (User-1) or above, so you need to log in first. Login later:

Press the [Start] key to start the workflow.

Press and hold the [Start] key for more than 2 seconds (equivalent to the [Stop] key) to stop the workflow.

8.5 Restore factory settings.

To restore the items set at the factory as user (User-1) password level or above, the following steps assume that you have successfully logged in:

button	Lower row display	Upper row display	meaning

【Fxx】	[F01]	[d ***]	In the weighing display state, press and hold the [Fxx] key for a long time, and the lower row will flash. If [F00] is displayed in the lower row. Then enter the password above the user level to log in first, and then do this step again.
Press and hold	[F31]	[Init 0]	Press and hold [↑] continuously to quickly locate F31.
【↑】	[F31]	[Init 1]	1, indicating that the initialization operation is selected.
[input]	[F31]	[Init ok]	Indicates that initialization is complete.
[Cancel]	[***]	[*****]	Exit the settings menu

Table 8.6 Operation Steps to Restore Factory Settings

Note: Please use this function carefully. When factory settings need to be restored, please save important parameters and data, such as tare value and calibration coefficient.

IX. Appendix

Appendix 1 Top Loose Communication Protocol

The loose communication protocol is a master-slave protocol based on Ascii code bytes. Each lower computer (instrument) has a unique address, and the upper computer sends instructions to the lower computer at the specified address. After receiving the instructions, the lower computer returns the corresponding information if the verification is correct. After receiving the correct answer, the upper computer will process it. If it is not received for a certain period of time, it will be regarded as communication timeout.

1. Format of protocol data frame

Whether it is the upper computer or the lower computer, the data of each frame has the same structure as the start byte and the end byte, as shown in the following two sections.

1.1 upper computer sends data frame format

Frame	1	2	3	4	5	6
symbol	XON	ADDR	CMD	DATA	CHK	XOFF
meaning	leading flag	address	order	data	check	End mark
Number of bytes	1	1	1	n	1	1
numerical value	0x02	A-Z	A-Z	*	*	0x03

Table 9.1 data frame format of upper computer transmitter

The first part (Xon), fixed at 0x2, indicates the beginning of the data frame.

The second part (addr) is the instrument address. The value range is A-Z of the ASCII code, corresponding to 1-26 of the corresponding address parameter. After receiving the command, the lower computer will distinguish whether the local data is based on the address.

In part 4 (data), the number of bytes is uncertain. Most commands are 0 bytes.

The fifth part is the check code, which takes up one byte

XOR all byte data before the check code of this data frame, and then carry out or operation with 0x40, that is

(CHK) = (XON) xor (ADDR) xor (CMD) xor (DATA1) xor (DATA2) xor ⋯ xor (DATAn) or (0x40)

Part 6 (XOFF), end of data frame marker.

2.1 format of response data frame

Frame	1	2	3	4	5	6
symbol	XON	ADDR	CMD	DATA	CHK	XOFF
meaning	leading flag	address	order	data	check	End mark
Number of bytes	1	1	1	n	1	1

numerical value	0x02	A-Z	a-z	*	*	0x03

Table 9.2 data frame format of lower computer (instrument) response terminal

The structure and meaning of the data frame answered by the responder is the same as that of the sender. The first difference is that in the third part (CMD), the lower computer returns the lower case letter of the corresponding command.Data will not be empty.

2. Detailed explanation of top song communication protocol command

2.1 command a to take the current weighing and status, including net weight, tare weight and various states.

Host command (example address is a)

Command section	XON	ADD	CMD	CHK	XOFF
Hex format	02	41	41	42	03
ASCII format	*	A	A	B	*

Slave answer:

content	XON	ADD	CMD	DATA							CHK	XOFF
				±	nnnnn	p	tttttt	e	f	u		
Hex format	02	41	61	See the table below.							49	03
ASCII format	*	A	a								I	*

DATA part of slave machine answer (Note: the specific data in the following table is an example)

DATA	±	nnnnn	p	tttttt	e	f	u
meaning	symbol	Net weight	decimal point	Tare weight value	mistake	condition	reserve
Hex format	2B	30 30 35 36 33 32	30	30 30 30 30 30 30	00	00	20
ASCII format	+	005632	0	000000			

Note: F represents the current state, and its bit meaning: D0- zero D1- stable D2- peeling.

2.2 Command B to read the accumulated data of the instrument.

Host command (example address is a)

Command section	XON	ADD	CMD	CHK	XOFF
Hex format	02	41	42	41	03
ASCII format		A	B	A	

Slave answer:

content	XON	ADD	CMD	DATA			CHK	XOFF
				cc	nnnnnn	ddddddddddd		
Hex format	02	41	62	See the table below.			49	03
ASCII format		A	b				I	

DATA answered by slave means:

DATA	cc	nnnnn	ddddddddddd
meaning	material code	Total times	Total weight

2.3 Command C to read the current display content of the instrument.

Host command (example address is a)

Command section	XON	ADD	CMD	CHK	XOFF
Hex format	02	41	43	40	03
ASCII format		A	C	@	

Slave answer:

content	XON	ADD	CMD	DATA		CHK	XOFF
				pp...p	abc		
Hex format	02	41	62			49	03
ASCII		A	b			I	

format						

DATA answered by slave means:

PP ... p—display characters of digital tube					
Abc—indicates the status					
The meaning of each binary bit of a			The meaning of each binary bit of b		
BIT number (bit)	working parameter		BIT number (bit)	working parameter	
0	=1 indicates that relay No.1 works.		0	=1 indicates that the No.1 external input has a signal.	
1	=1 indicates that relay No.2 works.		1	=1 indicates that there is a signal from external input No.2.	
2	=1 indicates that relay No.3 works.		2	=1 indicates that external input No.3 has a signal.	
3	=1 indicates that relay No.4 works.		3	=1 indicates that the No.4 external input has a signal.	
4	=1 indicates that relay No.5 works.		4	=1 indicates that there is a signal at external input No.5.	
5	=1 indicates that relay No.6 works.		5	=1 indicates that the No.6 external input has a signal.	
6	Hengwei 1		6	Hengwei 1	
7	Check Digit		7	Check Digit	
The meaning of each binary bit of c					
BIT number (bit)	working parameter				
0	=1 indicates that the No.7 external input has a signal.				
1	=1 indicates that the No.8 external input has a signal.				
2	=1 indicates that relay No.7 works.				
3	=1 indicates that relay No.8 works.				
4	=1 means peeling.				
5	=1 indicates stability.				
6	Hengwei 1				
7	Check Digit				

2.4 command d to read the control status of the specified instrument.

Host command (example address is a)

Command section	XON	ADD	CMD	CHK	XOFF
Hex format	02	41			03
ASCII format		A	D		

Slave answer:

content	XON	ADD	CMD	DATA	CHK	XOFF
				ijkl		
Hex format	02	41				03
ASCII format		A	d			

DATA answered by slave means:

IJKL—Status of external input port and output relay of instrument				
The meaning of each binary bit of I			The meaning of each binary bit of j	
BIT number (bit)	Work parameters		BIT number (bit)	Work parameters
0	=1 indicates that the No.1 external input has a signal.		0	=1 indicates that the No.7 external input has a signal.
1	=1 indicates that there is a signal from external input No.2.		1	=1 indicates that the No.8 external input has a signal.
2	=1 indicates that external input No.3 has a signal.		2	=1 indicates that relay No.1 works.
3	=1 indicates that the No.4 external input has a signal.		3	=1 indicates that relay No.2 works.
4	=1 indicates that there is a signal at external input No.5.		4	=1 indicates that relay No.3 works.

5	=1 indicates that the No.6 external input has a signal.		5	=1 indicates that relay No.4 works.
6	Hengwei 1		6	Hengwei 1
7	Check Digit		7	Check Digit
The meaning of each binary bit of k			The meaning of each binary bit of l	
BIT number (bit)	Work parameters		BIT number (bit)	Work parameters
0	=1 indicates that relay No.5 works.		0	=1 indicates that relay No.11 works.
1	=1 indicates that relay No.6 works.		1	=1 indicates that relay No.12 works.
2	=1 indicates that relay No.7 works.		2	=1 indicates that relay No.13 works.
3	=1 indicates that relay No.8 works.		3	=1 indicates that relay No.14 works.
4	=1 indicates that relay No.9 works.		4	=1 indicates that relay No.15 works.
5	=1 indicates that relay No.10 works.		5	=1 indicates that relay No.16 works.
6	Hengwei 1		6	Hengwei 1
7	Check Digit		7	Check Digit

2.5 command k to perform a key function of the specified instrument.

Host command (example address is a)

Command section	XON	ADD	CMD	DATA	CHK	XOFF
				xx		
Hex format	02	41				03
ASCII format		A	K			

Slave answer:

content	XON	ADD	CMD	DATA		CHK	XOFF
Hex format	02	41					03
ASCII format		A	k	o	k		

2.6 Command Q to clear the accumulated data and consumption data of the specified instrument.

Host command (example address is a)

Command	XON	ADD	CMD	CHK	XOFF

section					
Hex format	02	41			03
ASCII format		A	Q		

Slave answer:

content	XON	ADD	CMD	DATA		CHK	XOFF
Hex format	02	41					03
ASCII format		A	q	o	k		

2.7 command t to read the parameters of the specified instrument.

Host command (example address is a)

Command section	XON	ADD	CMD	DATA	CHK	XOFF
				Txxx		
Hex format	02	41	56			03
ASCII format		A	U			

Slave answer:

content	XON	ADD	CMD	DATA		CHK	XOFF
				xxx	dddddddd		
Hex format	02	41					03
ASCII format		A	t				

2.8 Command U to set the parameters of the specified instrument.

Host command (example address is a)

Command section	XON	ADD	CMD	DATA	CHK	XOFF
				xxxddd		
Hex format	02	41	56			03
ASCII format		A	U			

Slave answer:

content	XON	ADD	CMD	DATA		CHK	XOFF
Hex	02	41	62				03

format							
ASCII format		A	u	o	k		

2.9 Command V sets the date and time of the specified instrument.

Host command (example address is a)

Command section	XON	ADD	CMD	DATA	CHK	XOFF
				yymmddhhnnss		
Hex format	02	41	56		52	03
ASCII format		A	V	171201205730		

Slave answer:

content	XON	ADD	CMD	DATA		CHK	XOFF
Hex format	02	41	62				03
ASCII format		A	v	o	k		

2.10 command w to set the specified instrument process execution pointer.

Host command (example address is a)

Command section	XON	ADD	CMD	DATA	CHK	XOFF
				ddd		
Hex format	02	41	57			03
ASCII format		A	W			

Slave answer:

content	XON	ADD	CMD	DATA		CHK	XOFF
Hex format	02	41	61				03
ASCII format		A	w	o	k		

Appendix 2 Command of Continuous Sending Mode

When the communication parameter F06 is set to 4,5,6,7, it is the continuous transmission mode. At this time, F07 no longer represents the instrument address, but represents the information content and format of continuous transmission. The time interval between two consecutive strings of data is 35 ms.

The sending format is as follows:

parameter F07	Format name	Content format	remarks
1	Top loose format 1	(STX)Aa±nnnnnnptttttteff(CHK)(ETX)	The return of a command
2	Yaohua old D2+ format	=51.0700=51.0700……	8 bytes per frame
3	/		
4	TOLEDO standard format		Without checksum
5	TOLEDO standard format		With checksum
6	705 format	ST,GS,+0012.34,kg(CRLF) US,GS,-002000,kg(CRLF)	
7	Top loose format 2	(STX)AA±nnnnnnptttttteff(CHK)(ETX)	
8	/		
9	/		
10	/		
11	Taiwan Province C-8500TS UMC600 format	(STX)- 12.34KGM(CRLF)	
12	XK3190-A9 mode	(STX)-002000PCC(ETX)	Yaohua
13	/		
14	Hbwe2110 format	(STX)- 12.34G(ETX) (STX)12.34M(ETX)	
15	Yaohua new D2+ format	=51.07000=51.07000……	9 bytes per frame
16	A8MD dynamic table format	[7F7F7F7F7F02]npss111222…..xxxC	
17	/		
18	RI5000 format	(STX)- 12.34G(CRLF) (STX) 12.34M(CRLF)	
19	HB8212 format	(STX)- 12.34 kg GRM(CRLF) (STX) 12.34 kg GR (CRLF)	Formosa plastics
20	EX2001 format	ST,GS,+0012.34kg(CRLF)	Similar to 1705

			format, there is no comma of 15th word.
21	Simplified Toledo format		With checksum
22	Simplified Toledo format		Without checksum
23	Yancheng Asano format		The same as TOLEDO simplified format checksum is changed to [0A]

Appendix 3: Continuous Transmission Format

Note: Please contact us if you need the details of continuous sending format.

Appendix 3 Modbus RTU communication function code table

Functional address	meaning		Register attribute
4x0000	Parameter: P01		4 bytes, signed, read / write
4x0002	Parameter: P02		4 bytes, signed, read / write
.....			
4x0176	Parameter: P89		4 bytes, signed, read / write
4x0178	Parameter: P90 (gross weight of scale 2)		4 bytes, signed, read-only
4x0180	Parameter: P91 (net weight of scale 2)		4 bytes, signed, read-only
4x0182	Parameter: P92 (tare weight of scale 2)		4 bytes, signed, read / write
4x0184	Parameter: p93		4 bytes, signed, read / write
4x0186	Parameter: p94 (pulse port count value)		4 bytes, signed, read / write
4x0188	Parameter: p95 (No.1 4-20mA output value)		4 bytes, signed, read-only
4x0190	Parameter: P96 (No.2 4-20mA output value)		4 bytes, signed, read-only
4x0192	Parameter: p97 (4-20mA input value)		4 bytes, signed, read-only
4x0194	Parameter: p98		4 bytes, signed, read / write
4x0196	Parameter: p99		4 bytes, signed, read / write
4x0198	Bit 1	Output relay out1 status	2, no sign
	Bit 2	Output relay out2 status	
	...	...	
	Bit 16	Output relay Out16 status	
4x0199	Bit 1	Input in1 status	2, no sign
	Bit 2	Input in2 status	
	...	...	
	Bit 12	Input in12 status	
	Bit 13	Output relay out17 status	
	Bit 14	Output relay out18 status	

	Bit 15	Output relay OUT19 status	
	Bit 16	Output relay OUT20 status	
4x0200	Output value of analog quantity (4-20mA)		2, no sign
4x0201	Last stored item		2, no sign
4x0202	Net weight of scale 1		4 bytes, signed, read-only
4x0204			4 bytes, signed, read-only
4x0206	Gross weight of scale 1		4 bytes, signed, read-only
4x0208	1# analog output setting		2, no sign
4x0209	2# Analog Output Settings		2, no sign
4x0210	Current AD value of scale No.1		4 bytes, signed, read-only
4x0212	Panel number (see Note 3 for details)		2 bytes, unsigned, read/write
4x0213	Accumulated times of storage		2 bytes, unsigned, read/write
4x0214	Division value		2 bytes, unsigned, read/write

Modbus RTU function code table (continued 1)

Functional address	meaning	Register attribute
4x0215	Low byte: weight decimal places, high byte: flow decimal places.	2 bytes, unsigned, read/write
4x0216	Zero range	2 bytes, unsigned, read/write
4x0217	Zero tracking range	2 bytes, unsigned, read/write
4x0218	IN9-IN24 (modified after 2022)	2 bytes, unsigned, read/write
4x0219	IN25-IN40 (modified after 2022)	2 bytes, unsigned, read/write
4x0220	Calibration coefficient of scale No.1	4 bytes, unsigned, read/write
4x0222	Accumulated weight of stored	4 bytes, unsigned, read/write
4x0224	Zero point calibration AD value of No.1 scale	4 bytes, unsigned, read/write
4x0226	Maximum range	4 bytes, unsigned, read/write

4x0228	Remote control trigger pointer (can't write continuously, can only write once)	2 bytes, unsigned, write only
4x0229	Working state of 1# process executor	2, no sign
4x0230	Working state of 2# process executor	2, no sign
……	Working state of 3#-11# process executor	2, no sign
4x0240	Working state of 12# process executor	2, no sign
4x0241	Display panel digital tubes DSSP1,DSSP2	2, no sign
4x0242	Display panel digital tubes DSSP3,DSSP4	2, no sign
4x0243	Display panel digital tubes DSSP5,DSSP6	2, no sign
4x0244	Display panel digital tube DSSP7,DSSP8	2, no sign
4x0245	Display panel digital tube DSSP9,DSSP10	2, no sign
4x0246	Display panel digital tube DSSP11,DSSP12	2, no sign
4x0247	Display panel digital tube DSSP13,DSSP14	2, no sign
4x0248	Output status (D0-D15):IN1-IN8,OUT1-OUT8	2, no sign
4x0249	(D0-D15): Whether the formula can be set, IO test, zero position 2 Zero position, stable 2, stable 1, peeled 2, peeled 1 OUT9-OUT16	2, no sign
4x0250	Current AD value of scale No.2	4 bytes, signed, read-only
4x0252	Zero point calibration AD value of No.2 scale	4 bytes, signed, read / write
4x0254	Calibration coefficient of No.2 scale	4 bytes, unsigned, read/write
4x0256	Current AD value of scale No.3	4 bytes, signed, read-only
4x0258	Zero point calibration AD value of No.3 scale	4 bytes, signed, read / write
4x0260	Calibration coefficient of No.3 scale	4 bytes, unsigned, read/write
4x0266	Large screen output (modified after 2022)	2 bytes, unsigned, read/write
4x0267	FormulaNo. (modified after 2022)	2 bytes, unsigned, read/write
4x0268	Judgment scope (revised after 2022)	2 bytes, unsigned, read/write

Appendix 1:Modbus RTU function codes

Note: The address of the register is orange, indicating that it was adjusted in 2016. Please check it again before using it.

Note: The maximum number of bytes read in a block is 120.

Note: The register (4x0212) is the panel key number, and writing a number into this register indicates that a key is pressed, which can be a physical key or an internal function key. See the following table for details:

serial number	Schematic value	Actual written value	Corresponding function
1	128+1	129	Press the [↑] key of the short instrument.
2	128+2	130	Press the 【↓】 key of the short instrument.
3	128+3	131	Press the [←] key of the short instrument.
4	128+4	132	Press the [→] key of the short instrument.
5	128+5	133	Press the [Enter] key of the short instrument.
6	128+6	134	Press the [Cancel] key of the short instrument.
7	128+7	135	print
8	128+8	136	Print report
9	128+9	137	Print custom documents
10	128+10	138	1# scale calibration
11	128+11	139	Press the [↑] key of the long meter, which is equivalent to the [Stop] key.
12	128+12	140	This function is not available.
13	128+13	141	Press the [←] key of the instrument for a long time, which is equivalent to the [Clear] key.
14	128+14	142	Press the [→] key of the instrument, which is equivalent to the [Pxx] key.
15	128+15	143	Press the [Enter] key of the instrument, which is equivalent to the [Fxx] key.
16	128+16	144	This function is not available.
17	128+20	145	2# Scale Calibration
18	256+0	146	Exit IO test
19	256+1	147	Enter IO test.

20	256+1	147	Pass OUT1
21	256+2	148	Pass OUT2
……	……		
39	256+20	276	OUT20
40	288+1	289	Off 1
41	288+2	290	Off 2
……	……		
59	288+20	306	OUT20

Appendix 2: Values and Functions of Register (4x0212)

Revision history

version	date	Revision content	reviser
1.0.0	2017-11-24	1. Several illustrations were modified to adapt to PDF format. 2. All pictures and tables have been added with a number for easy indexing. 3. Unified the format of each interface description. 4. Some wording has been modified to make it easier for users to understand.	Bao Feiping
1.0.1	2017-11-25	1. Complete all the illustrations (there are still a few photos that haven't been put in) 2. Size of display panel and touch screen to be verified.	Bao Feiping
1.0.2	2017-11-27	1. The physical drawing of host and display panel has been added. 2. The layout of instrument interface is independent. 3. The title of the subsection after the big section of the text adopts Arabic numerals, such as 2.1,2.1.1.	Bao Feiping
1.0.3	2017-12-01	1. Added content. 1. Some pictures have been added.	Bao Feiping
1.1.0	2017-12-01	1. Basic stereotypes, all large pieces of content have been modified. 2. The top loose agreement still needs to be improved. 3. Some contents, such as display code, need to be improved. 4. Continuous sending mode removes the specific protocol content.	Bao Feiping
1.1.1	2017-12-05	1. Modified the opening size diagram of touch screen. 2.4 Add a description of the wire connection method (orange for emphasis)	Bao Feiping
1.1.2	2018-02-08	Some errors have been corrected.	Bao Feiping

What needs to be written in the future:
Connection of serial port printer