1. Product overview

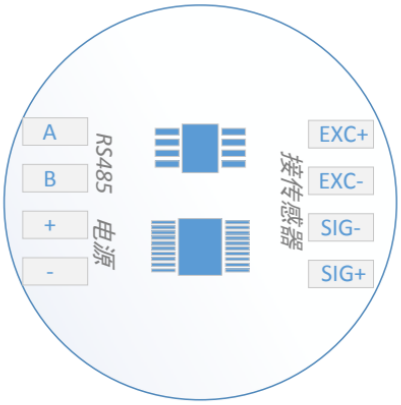
The ZFD210 digital weighing transmitter is designed for high-quality products for all kinds of industrial applications, using Delta-sigma analog-to-digital conversion and digital filtering processing technology.Digital processing through the weak weight signal output by the symmetric heavy sensor (group) is output to the user's upper position system via the RS485 serial port communication, and it is easy to form a weighing system with the touch screen or PLC.The transmitter has the characteristics of high accuracy, high interference resistance, high linearity, performance stability, simple operation and support for various protocols.

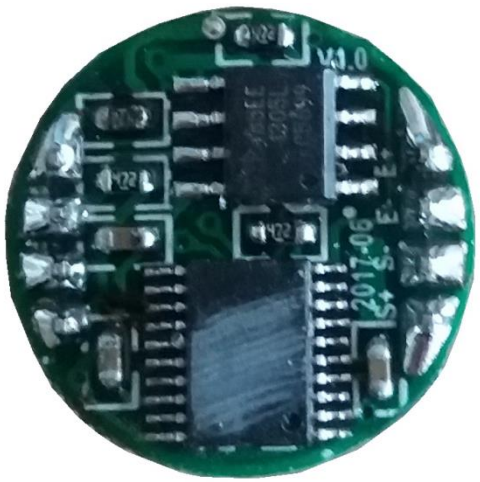
1.1 technical parameter

parameter	Technical Index
Voltage	DC: 6V--12V
input sensitivity	0.3mV/V~6mV/V
Sensor excitation voltage	5VDC
A/D resolution ratio	24
A/D method of sampling	The Delta-Sigma method
Display accuracy	1/50000
output speed	10HZ、40HZ
Drive capability	Up to 1350 Ω sensor
communication mode	Support for RS485 (Modbus RTU, free protocol, ASCII protocol)
Basic weighing function	Calibration, peeling, zero placement, skin removal, fur weight, zero-point tracking and other conventional weighing functions
outline dimension	Φ 17mm
working temperature	-30℃~ 60℃
A variety of filtering methods are optional	
Support for multisegment linear calibration function (up to 5 points)	

1.2 Wiring instructions

ZFD210接线示意图





说明：1、供电电压范围为6~12V

1.2.1 Sensor connection

ZFD210 weighing transmitter requires external resistance strain sensor and connect the sensor to the transmitter in the figure below.The ports of the sensor connection terminals are assigned to:

port	EX C +	EX C -	SIG+	SIG-
wiring	Power is positive	Negative power supply	The signal is positive	The signal is negative

Note: When using a hexagon sensor, briefly connect the sensor EX + with SN + to the transmitter EXC + port; EX-and SN-short to the sensor EXC-port.

1. Since the sensor output signal is an analog signal relatively sensitive to electronic noise, the sensor wiring should be shielded cable and laid separately from other cables, especially away from the AC power supply;

2. For the application of multi-sensor parallel, ensure that the sensitivity (mV / V) of each sensor is consistent.

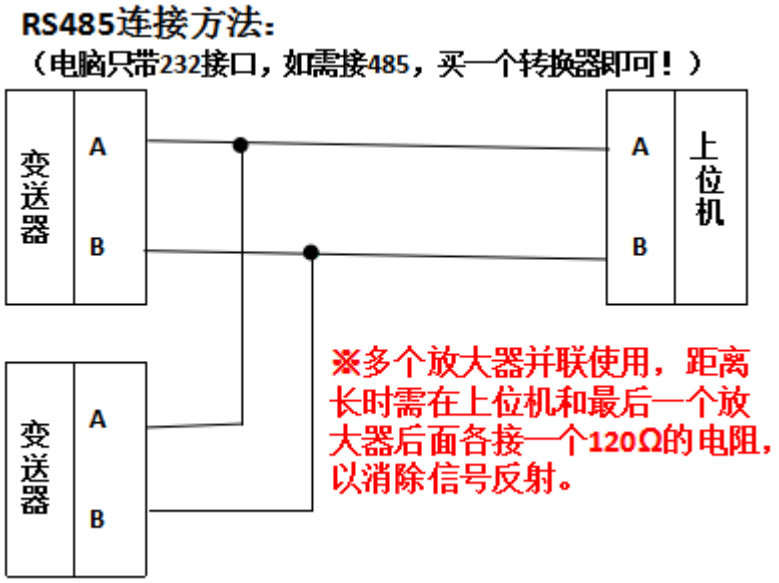
1.2.2 Power supply connection

The power supply range of the transmitter is DC: 6V- -12V

+	-
Power is positive	Negative power supply

1.2.3 Serial port output

Serial port communication is RS485. The each port distribution of its terminals is shown below:



2. Serial communication

ZFD210 provides RS485 serial ports for communication with the upper computer.There are three protocols: ASCII, Modbus, and Freedom.**The default is the Modbus protocol, which can be modified into two others by sending instructions.**

MODBUS RTU

1、 protocol:

Data format: 8-bit data, 1-bit stop bit, and odd check

8-bit data, 1-bit stop bit, parity

8-bit data, 1-bit stop bit, no check

8-bit data, 2-bit stop bits, no check (default)

Transmission rate: 4800,9600 (default), 19200,38400,57600bps

2、 data format:

Frame head	Module address	Function code	data	CRC16 verification	Frame, tail
≥3.5 character	1 byte	1 byte	0 to 252 bytes	2 byte	≥3.5 character

3、 Read register (0x03 function code)

Read, format

Module, address	Functions, codes	Register start address		Number of registers		CRC16 verification	
A ddr	0x 03	High 8	Low 8	High 8	Low 8	**Low 8**	**High 8**

Module returns format (broadcast instruction does not reply)

Module, address	Functions, codes	Bytes	First set of register data		….Register, Data...	Last group register data		CRC16 verification	
A ddr	0x 03	N	High 8	Low 8	……..data……..	High 8	Low 8	**Low 8**	**High 8**

4、 Write register (0x10 function code)

Write, format

Module, address	Function code	Register start address		Number of registers		Bytes	First set of register data		….Register, Data...	Last group register data		CRC16 verification	
A ddr	0x10	High 8	Low 8	High 8	Low 8	N	High 8	Low 8	….data….	High 8	Low 8	**Low 8**	**High 8**

Module returns format (broadcast instruction does not reply)

Module,	Functions	Register start address	Number of registers	CRC16 verification

address	, codes						
A ddr	0x10	High 8	Low 8	High 8	Low 8	**Low 8**	**High 8**

5、 Error response format

Module, address	FC +0x80	Error, code		CRC16 verification	
Addr	0x03+0x80=0x83, 0x10+0x80=0x90	High 8	Low 8	**Low 8**	**High 8**

Error code: 0x01: The function code sent by the host is not supported by the module

0x 02: The host sends a register address beyond the scope of module support

0x03: The host writes the data to the target register beyond that supported by that register

When the parity error, CRC verification error and broadcast instruction error occur in the instructions received by the module, the module does not reply, and the host can process accordingly according to the timeout.

matters need attention:

- **Address Addr Value range: 1~247; 0 is the broadcast address; all broadcast instructions are not answered**
- **The CRC calibration range is the data for the entire protocol frame**

6、 List of registers

class	name	address	type	description	attribute	Windows default
tie interconnected system	Module address	40001 (000)	16 signless integer	Serial port communication address; range 1~247 (if unlocked)	Read / write	0x01
	Porter Rate Settings	40002 (001)	16 signless integer	(Unit bps): (if unlocked) 0x00:1200 0x01:2400 0x02:4800 0x03:9600 (default) 0x04:19200 0x05:38400 0x06:57600	Read / write	0x03
	data frame format	40003 (002)	16 signless integer	**(Unlocked)** 0x03:8 bit data bit, parity, 1 bit stop bit 0x04:8 bit data bit, odd check, 1 bit stop bit 0x05:8 bit data bit, no verification, 1 bit stop bit 0x06:8-bit data bit, no check, 2-bit stop bit (default)	Read / write	0x06
	protocol type	40004 (003)	16 signless integer	0x00: Free protocol (default) 0x02: ASCII 0x01: Modbus RTU (if unlocked)	Read / write	0x00
	The instruction response is delayed	40005 (004)	16 signless integer	For RS485 communication, some hosts are slow in switching, resulting in the loss of response instructions in ms; range: 0~255; 0 is not delayed	Read / write	0x00

	Lock / Unlock system configuration	40006 (005)	The height is 16 (signless integer)	Prevent you from receiving error instructions during module operation and having accidentally modified your system configuration.Once the configuration is locked, the module will be unable to receive an external serial port command for modification until the lock is lifted. Including: module address, port rate, data frame format, protocol type, restore factory settings and other registers.Write to 0x5AA5 unlock system configuration; write to any other value lock system configuration; reading this register will return to 0	write only	--
	The firmware version	40007 (006)	16 signless integer	Module internal software version	read only	--
	factory data reset	40008 (007)	16 signless integer	Return to factory default parameter; write 0x55 module starts initialization and will restart after the initialization completes; read this register returns to 0 **(Unlocked)**	write only	--
survey measure	measured value	40031 (030)	The height is 16 (Symbol integer)	After the calibration value of the AD internal code, the negative number adopts the standard complement method	read only	--
		40032 (031)	A 16-bit low (Symbol integer)			
	AD conversion rate	40033 (032)	16 signless integer	Set the AD conversion speed, the faster the lower the sampling accuracy 0x00:10 (Default) 0x01:40	Read / write	0x04
	Pull pressure two-way	40034 (033)	16 signless integer	Set the polarity; 0x00: Two-way; 0x01: One-way	Read / write	0x00
	Filter type	40035 (034)	16 (signless integer)	Select the appropriate filtering method according to the different applications 0x00: No 0x01: average filtering 0x02: Median-value filter 0x03: first-order filtering 0x04: Slide average filtering 0x05: Median average filtering 0x06: Sliding median value average filtering 0x07: Mean filter + first-order filtering 0x08: Median-value filter + first-order filtering 0x09: Slide average filtering + first-order filtering 0x0A: Median average filtering + first-order filtering	Read / write	0x00

	Filter strength	40036 (035)	16 (signless integer)	Range: 0~50, the larger the number, the stronger the filtering	Read / write	0x05
	Zero inside code value	40037 (036)	The height is 16 (Symbol integer)	AD internal code value corresponding to zero point; range: -8000000~8000000 Write: 0x7fffffff sets the current inner code to the zero inner code	Read / write	0x00
		40038 (037)	A 16-bit low (Symbol integer)			
	Zero point measurement	40039 (038)	The height is 16 (Symbol integer)	Measurement value corresponding to zero point; range: -8000000~8000000	Read / write	0x00
		40040 (039)	A 16-bit low (Symbol integer)			
	The gain internal code value	40041 (040)	The height is 16 (Symbol integer)	The AD internal code value corresponding to the gain; range: -8000000~8000000 Write: 0 The x7fffffff takes the current inside code as the gain inside code	Read / write	0x41A41A
		40042 (041)	A 16-bit low (Symbol integer)			
	Value of gain measurement	40043 (042)	The height is 16 (Symbol integer)	Measurement value corresponding to the gain; range: -8000000~8000000	Read / write	8000000
		40044 (043)	A 16-bit low (Symbol integer)			
	Read the AD internal code	40045 (044)	The height is 16 (Symbol integer)	The AD converts the filtered raw code	read only	--
		40046 (045)	A 16-bit low (Symbol integer)			
Multi-point correction (up to 5 points of support)	Multi-point correction closed	40061 (060)	16 signless integer	This register is write only, write any non-zero value off multi-point correction, reading this register will return 0	write only	0
	Multi-point correction number	40062 (061)	16 signless integer	This register is read-only, read this register returns the number of internal multipoint corrections, write this register is invalid	read only	0

	Code value in point N	40063 (062)	The height is 16 (Symbol integer)	AD internal code value corresponding to point N; range: -8000000~8000000; if 0x7fffffff is written to this register, replaced with the current AD internal code value;	write only	--
		40064 (063)	A 16-bit low (Symbol integer)			
	Point N measurements	40065 (064)	The height is 16 (Symbol integer)	Measurements corresponding to point N; range: -8000000~8000000;	write only	--
		40066 (065)	A 16-bit low (Symbol integer)			
	Insert the corrected value	40067 (066)	16 (signless integer)	Write the AD internal code to the point N internal code value register; then write the N point measurement value register; then write 0x01 to the register, the module inserts the data into the internal multipoint correction data table; the data table supports up to 50 points, the register is write only; the read returns 0	write only	--
fit short for Taizhou	rough weight	40081 (080)	The height is 16 (Symbol integer)	Actual gross weight, negative number using the standard complement method	read only	--
		40082 (081)	A 16-bit low (Symbol integer)			
	net weight	40083 (082)	The height is 16 (Symbol integer)	Value after fur weight; negative sampling	read only	--
		40084 (083)	A 16-bit low (Symbol integer)			
	tare	40085 (084)	The height is 16 (Symbol integer)	Skin weight value; range: -8000000~8000000; write to 0x7fffffff for automatic peeling;	read-write	0
		40086 (085)	A 16-bit low (Symbol integer)			
	maximum capacity	40087 (086)	The height is 16	Maximum weighing value; range: 0~8000000; set before using the weighing function	Read /	1000000

			(Symbol integer)		write	
		40088 (087)	A 16-bit low (Symbol integer)			
	Claims the degree of the table	40089 (088)	16 (signless integer)	Call level value; set before using the station function.0x00:0.0001 0x01:0.0002 0x02:0x0005 0x03:0.001 0x04:0.002 0x05:0.005 0x06:0.01 0x07:0.02 0x08;0.05 0x09:0.1 0x0A:0.2 0x0B:0.5 0x0C:1 0x0D:2 0x0E:5 0x0F:10 0x10:20 0x11:50	Read / write	0
	Weight of the weight at zero-point calibration	40090 (089)	The height is 16 (Symbol integer)	This register scales the weight value for zero; set before using the table function	Read / write	0
		40091 (090)	A 16-bit low (Symbol integer)			
	Weight weight at gain calibration	40092 (091)	The height is 16 (Symbol integer)	This register is the weight value corresponding the gain calibration; set before using the bench function	Read / write	100000
		40093 (092)	A 16-bit low (Symbol integer)			
	Manual zero range	40094 (093)	16 (signless integer)	Set the range of manual reset; the percentage of full range; the manual reset function is invalid after writing 0 is invalid	Read / write	0
	Execute manual zero	40095 (094)	16 (signless integer)	Manual zero operation after writing 0x01	write only	--
	Boot set zero range	40096 (095)	16 (signless integer)	Set the range of boot zero clearance; the unit is the percentage of the full range; the boot zero clearance function is invalid after writing 0	Read / write	0
	Automatic zero-bit tracking range	40097 (096)	16 (signless integer)	Parameter range: 0~10000; unit: 0.1d; close zero bits tracking function when set 0	Read / write	0
	Automatic zero-bit tracking time	40098 (097)	16 (signless integer)	Scope: 1~50; unit: 0.1s	Read / write	10

7. Details of the basic instruction set

Detailed instruction set instructions are given as described in the following sections.

7.1 Module address

The customer can set the address through two ways, one is set through the dialing switch, up to 63, the specific setting method has been described in 1.2.4, the dialing switch should dial the position before power on, and the second should dial the SW1 to SW6 to the "off" file through the software setting.The dial switch is valid before it is powered on.

Directive format: 01 10 00 00 00 01 02 00 02 27 91 (unlock before use) address changed from 01 to 02 when code format

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	00	00	01	02	00	02	27	91

Return format: 0110000000000101 C 9

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	00	00	01	01	C9

7.2 Porter rate setting

The default port rate is 9600, modified to 19200 and the input format is as follows

Directive format: 01 10 00 01 00 01 02 00 04 A6 42, and manually select the system port rate to 19200 (unlock before use)

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	01	00	01	02	00	04	A 6	42

Return format: 01 10 00 01 00 01 50 09 (the answered data is returned after the transmitter switches to a new port rate, if the upper machine does not switch to the new port rate, the data cannot be received in time)

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	01	00	01	50	09

7.3 data frame format

The default of the amplifier is 06 (8-bit data bit, no check, 2-bit stop bit) option format, modified to 4 (8-bit data bit, odd check, 1-bit stop bit) option

Command format: 01 10 00 02 00 01 02 00 04 A6 71, after manually sending the command, data bit, stop bit are set on the upper 4 (to be unlocked before use)

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	02	00	01	02	00	04	A6	71

Return format: 01 10 00 02 00 01 A0 09 (the answered data is returned after the transmitter switches to the new data frame format, if the upper computer does not switch to the new data frame format, the data cannot be received)

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	02	00	01	A0	09

7.4 Agreement type setting

The protocol may be set by a code dial switch, referring to 1.2.4, or by software, such as changing the Modbus RUT to a free protocol

Command format: 01 10 00 03 00 01 02 00 00 A6 63

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	03	00	01	02	00	00	A6	63

Return format: 01 10 00 03 00 01 F1 C9

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	03	00	01	F1	C9

After switching to 00 (Free protocol), 01 (Modbus RTU), 02 (ASCII), the digital frame format returns to the default value.

7.5 Command response delay setting

When the delay is 10ms

Command format: 01 10 00 04 00 01 02 00 10 A6 18

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	04	00	01	02	00	10	A6	18

Return format: 01 10 00 04 00 01 40 08

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	04	00	01	40	08

In ms, the response delay is used for RS485 communication, because RS485 is semi-duplex and can only be sent or collected, not at the same time.Some hosts are slow to send and switch, resulting in the loss of response instructions, so the response delay time can be avoided by reasonably setting the instructions.

7.6 Locking / unlock system configuration

Command format: 01 10 00 05 00 01 02 5A A5 5C DE

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	05	00	01	02	5A	A5	5C	DE

Return format: 01 10 00 05 00 01 11 C8

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	05	00	01	11	C8

Prevent you from receiving error instructions during module operation and having accidentally modified your system configuration.Once the configuration is locked, the module will be unable to receive an external serial port command for modification until the lock is lifted.

Includes: module address, port rate, digital frame format, protocol type, restore factory settings and other registers.Write to 0x5AA5 to unlock the system configuration; reading this register will return to 0.

The default is locked after power is applied on the amplifier.

7.7 Firmware version

Return the module intranet version number to the upper computer

Command format: 01 03 00 06 00 01 64 0B

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	03	00	06	00	01	64	0B

Return format: 01 03 02 00 64 B9 AF

Module address	Function code	Bytes	First set of register data		CRC16 verification	
01	03	02	00	64	B9	AF

7.8 Restore the factory settings

Command format: 01 10 00 07 00 01 02 00 55 67 D8

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	07	00	01	02	00	55	67	D8

Return format: 01 10 00 07 00 01 B0 08

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	07	00	01	B0	08

Note This will remove all user setting parameters and calibration results within the amplifier and is not recoverable with caution!

7.9 Read the measurements

Command format: 01 03 00 1E 00 02 A4 0D

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	03	00	1E	00	02	A4	0D

Return format: 01 03 04 00 00 01 62 7A 4A (the data changes according to the actual situation)

Module address	Function code	Bytes	First set of register data		Second set of register data		CRC16 verification	
01	03	04	00	00	01	62	7A	4A

Measurements are values of code values within AD calibrated and converted by zero and gain.

7.10AD conversion speed

The default AD conversion speed is, 10, when changed to 40

Command format: 01 10 00 20 00 01 02 00 05 60 F0

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	20	00	01	02	00	05	60	F0

Return format: 01 10 00 20 00 01 00 03

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	20	00	01	00	03

The simulated signal to digital signal conversion, simply AD conversion, the faster the AD conversion speed, the lower the sampling accuracy.

AD sampling rate is the detection speed of item weight on the weighing device, usually between several times and hundreds of times per second, the high-speed weighing application can reach thousands of times. For a given weighing device, the faster the AD rate, the worse the data

accuracy of AD detection will be, and the slower the AD rate, the higher the accuracy of AD detection.Therefore, according to the rate of the real weighing, reasonably choose the needs can meet the lowest rate for AD sampling, can maximize the detection accuracy, so as to achieve the best balance point in speed and precision.

7.11 Two-way pull-up pressure

Change the one-way to the two-way time

Command format: 01 10 00 21 00 01 02 00 00 A0 E1

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	21	00	01	02	00	00	A0	E1

Return format: 01 10 00 21 00 01 51 C3

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	21	00	01	51	C3

Set the polarity: 0x00: Two-way; 0x01: One-way

7.12 Filter type

The default is 09: sliding average filter + first order filtering, changed to 08: median filtering + first order filtering

Command format: 01 10 00 22 00 01 02 00 08 A1 14

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	22	00	01	02	00	08	A1	14

Return format: 01 10 00 22 00 01 A1 C3

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	22	00	01	A1	C3

Select the appropriate filtering method according to the different applications

0x00: No 0x01: average filtering

0x02: Median-value filter 0x03: first-order filtering

0x04: Slide average filtering 0x05: Median average filtering

0x06: Sliding median value average filtering

0x07: Mean filter + first-order filtering

0x08: Median-value filter + first-order filtering

0x09: Slide average filtering + first-order filtering

0x0A: Median average filtering + first-order filtering

Filter intensity: AD-sampled data, For various reasons, It often confmixed noise from different causes, To get a weighing data as close to the real as possible, The weighing equipment will conduct data signal processing by digital filtering, While the AD filtering intensity, Is an important parameter for this data processing, in a general way, The smaller the filtering intensity, The faster the signal response speed of the data output, But the worse the effect of noise filtering is; The greater the filtering intensity, The slower the output signal response speed is, But the better the noise filtering, Between the response speed and the filtering effect, Reasonable choice, Looking for the best balance point, Is a key step to use a weighing device, There is no established standard for this, Users are required to be based on the site conditions, Make a trade, Is is a speed priority,

Is stability a priority, Depending on the customer's actual needs.

7.13 Porter intensity

The Porter intensity was changed to 10 hours

Command format: 01 10 00 23 00 01 02 00 10 A0 CF

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	23	00	01	02	00	10	A0	CF

Return format: 01 10 00 23 00 01 F0 03

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	23	00	01	F0	03

Range: 0~50, the larger the number, the stronger the filtering

7.14 Zero-point internal code value

Command format: 01 10 00 24 00 02 04 7F FF FF FF 10 D8

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	24	00	02	04	7F	FF	FF	FF	10	D8

Return format: 01 10 00 24 00 02 01 C3

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	24	00	02	01	C3

AD internal code value corresponding to zero point; range: -8000000~8000000

Write: 0x7fffffff sets the current inner code to the zero inner code

Zero point is the base point of weighing, and the weight increased or decreased on this benchmark is the actual weight of weighing.The zero calibration, as the name suggests, is the weight calibration, as a zero of the benchmark record, and then made on this basis.

7.15 Zero-point measurement value

Directive format: 011000260002040000000000719 D

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	26	00	02	04	00	00	00	00	71	9D

Return format: 01 10 00 26 00 02 A0 03

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	26	00	02	A0	03

7.16 Gain internal code value

Command format: 01 10 00 28 00 02 04 7f ff ff ff 45 D8

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	28	00	02	04	7f	ff	ff	ff	45	D8

Return format: 01 10 00 28 00 02 C1 C0

Module address	Function code	Register start address	Number of registers	CRC16 verification

01	10	00	28	00	02	C1	C0

7.17 Gain measurements

Command format: 01 10 00 2A 00 02 04 4E 20 27 10 16 7D

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	2A	00	02	04	4E	20	27	10	16	7D

Return format: 01 10 00 2A 00 02 60 00

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	2A	00	02	60	00

Put the weight, enter the value you want to calibration, such as 1KG weight to the 10KG pressure sensor, and set the measurement of 1000. When calibrated, a 2KG weight was placed onto the pressure sensor and read a measurement of 2000.

7.18 Read the AD internal code

Command format: 01 03 00 2C 00 02 05 C2

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	03	00	2C	00	02	05	C2

Return format: 01 03 04 00 19 3B 67 79 2E (the data changes according to the actual situation)

Module address	Function code	Bytes	First set of register data		Second set of register data		CRC16 verification	
01	03	04	00	19	3B	67	79	2E

The module returns the current AD internal code value to the host.

7.19 Multi-point correction is closed

Command format: 01 10 00 3C 00 01 02 00 01 62 AC

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	3C	00	01	02	00	01	62	AC

Return format: 01 10 00 3C 00 01 C1 C5

Module address	Register start address		Number of registers		CRC16 verification	
01	00	3C	00	01	C1	C5

This register is write only, write any non-zero value off multi-point correction, reading this register will return 0

7.20 Multi-point correction quantity

Command format: 01 03 00 3D 00 01 15 C6

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	03	00	3D	00	01	15	C6

Return format: 01 03 02 00 00 B8 44

Module address	Function code	Bytes	Register data		CRC16 verification	
01	03	02	00	00	B4	44

This register is read-only, read this register returns the number of internal multipoint corrections,

write this register is invalid

7.21 Code value in point N

Command format: 01 10 00 3E 00 02 04 7F FF FF FF 59 63

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	3E	00	02	04	7F	FF	FF	FF	59	63

Return format: 01 10 00 3E 00 02 20 04

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	3E	00	02	20	04

AD internal code value corresponding to point N; range: -8000000~8000000; if 0x7fffffff is written to this register, replaced with the current AD internal code value;

7.21 Point N measurements

Command format: 01 10 00 40 00 02 04 00 01 00 00 A6 5F

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	40	00	02	04	00	01	00	02	A6	5F

Return format: 01 10 00 40 00 02 40 1C

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	40	00	02	40	1C

Measurements corresponding to point N; range: -8000000~8000000;

7.22 Insert the correction value

Command format: 01 10 00 42 00 01 02 00 10 A8 BE

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	42	00	01	02	00	10	A8	BE		

Return format: 01 10 00 42 00 01 A1 DD

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	42	00	01	A1	DD

Write the AD internal code to the point N internal code value register; then write the N point measurement value register; then write 0x01 to the register, the module inserts the data into the internal multipoint correction data table; the data table supports up to 50 points, the register is write only; the read returns 0

7.23 Read the gross weight

Command format: 01 03 00 50 00 02 C4 1A

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	03	00	50	00	02	C4	1A

Return format: 01 03 04 FF FF C1 F0 AB C3 (data changes)

Module address	Function code	Bytes	First set of register data	Second set of register data	CRC16 verification

01	03	04	FF	FF	C1	F0	AB	C3

Gross weight = net weight + skin weight

7.24 Read the net weight

Command format: 01 03 00 52 00 02 65 DA

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	03	00	52	00	02	65	DA

Return format: 01 03 04 FF FF C1 EF EA 0B (data changes)

Module address	Function code	Bytes	First set of register data		Second set of register data		CRC16 verification	
01	03	04	FF	FF	C1	EF	EA	OB

Net weight = gross weight-skin weight

7.25 remove the peel

Command format: 01 10 00 54 00 02 04 7F FF FF FF DF 34

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	54	00	02	04	7F	FF	FF	FF	DF	34

Return format: 01 10 00 54 00 02 00 18

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	54	00	02	00	18

Skin weight value; range: -8000000~8000000; write to 0x7fffffff for automatic peeling

When the items weighed by the equipment are packaged, if we only need to weigh the weight of the item itself, we need to preremove the package as a leather weight.You can put the packaging directly on the table, and then peel, write to 0x7fffffff for automatic peeling.If the package is inconvenient to separate, and the weight of the package is known, the leather weight can be input into the weighing device by sending instructions, which is known as digital peeling.

7.26 Set the maximum weight

Command format: 01 10 00 56 00 02 04 00 00 C3 50 26 75

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	56	00	02	04	00	00	C3	50	26	75

Return format: 01 10 00 56 00 02 A1 D8

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	56	00	02	A1	D8

For example, there is a weighing device, the maximum weight can be weighed is 100.00KG, the minimum number of digital beating change is 0.02KG, then the maximum weighing is 100.00KG, that is to say, 100.00KG is the maximum weight of the weighing, the score value is 0.02KG, and the maximum weight and score should be set before using the weighing function.

7.27 Call the platform score

Command format: 01 10 00 58 00 01 02 00 09 6B 4E

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	58	00	01	02	00	09	6B	4E

Return format: 01 10 00 58 00 01 80 1A

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	58	00	01	80	1A

Call level value; set before using the station function.0x00:0.0001 0x01:0.0002
0x02:0x0005
0x03:0.001 0x04:0.002 0x05:0.005
0x06:0.01 0x07:0.02 0x08;0.05
0x09:0.1 0x0A:0.2 0x0B:0.5
0x0C:1 0x0D:2 0x0E:5
0x0F:10 0x10:20 0x11:50

7.28 Weight weight at zero-point calibration

Directive format: 01100059000204000000000036 F 9

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	59	00	02	04	00	00	00	00	36	F9

Return format: 01 10 00 59 00 02 91 DB

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	59	00	02	91	DB

This register scales the weight value for zero; set before using the table function

7.29 Weight of the weight at gain calibration

Command format: 01 10 00 5B 00 02 04 27 10 00 00 BC 51

Module address	Function code	Register start address		Number of registers		Bytes	First set of register data		Second set of register data		CRC16 verification	
01	10	00	5B	00	02	04	27	10	00	00	BC	51

Return format: 01 10 00 5B 00 02 30 1B

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	5B	00	02	30	1B

This register is the weight value corresponding the gain calibration; set before using the bench function

7.30 Manual zero range

Command format: 01 10 00 5D 00 01 02 00 01 6A DD

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	5D	00	01	02	00	01	6A	DD

Return format: 01 10 00 5D 00 01 90 1B

Module address	Function code	Register start address	Number of registers	CRC16 verification

01	10	00	5D	00	01	90	1B

Manual zero point is to ask the weighing equipment to take the current weighing data directly as the current zero point through the external button or command. As long as the current weighing weight does not exceed the range of manual zero point, the weighing equipment will immediately reset the display zero point.

7.31 Implement a manual zero-setting

Command format: 01 10 00 5E 00 01 02 00 01 6A EE

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	5E	00	01	02	00	01	6A	EE

Return format: 01 10 00 5E 00 01 60 1B

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	5E	00	01	60	1B

7.32 Start-on and zero range

Command format: 01 10 00 5E 00 01 02 00 01 6A EE

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	5E	00	01	02	00	01	6A	EE

Return format: 01 10 00 5E 00 01 60 1B

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	5E	00	01	60	1B

7.33 Set the automatic zero-bit tracking range

Command format: 01 10 00 60 00 01 02 00 01 6E 30

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	60	00	01	02	00	01	6E	30

Return format: 01 10 00 60 00 01 01 D7

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	60	00	01	01	D7

Parameter range: 0~10000; unit: 0.1d; close zero bits tracking function when set 0

The weighing equipment in the startup use will drift for AD temperature drift, sensor temperature drift and creep, and other reasons, including AD signal output. The zero point tracking calibration program in the equipment will automatically track the very slow drift and offset the drift, but the zero point tracking method has speed and range.

7.34 Set the automatic zero-bit tracking time

Command format: 01 10 00 61 00 01 02 00 10 AF ED

Module address	Function code	Register start address		Number of registers		Bytes	Register data		CRC16 verification	
01	10	00	61	00	01	02	00	10	AF	ED

Return format: 01 10 00 61 00 01 50 17

Module address	Function code	Register start address		Number of registers		CRC16 verification	
01	10	00	61	00	01	50	17

8. Use steps

8.1 Connect the wire and energize it

8.2 linkage

8.3 Zero-bit calibration

8.4 Gain calibration

8.5 Read measurements were used

The above is the basic operation of the amplifier, if using the platform function, in addition to the above steps, add the following steps

8.6 Set the maximum weight and score

8.7 Set (zero & gain calibration) weight weight

The zero-bit tracking function is based on the calling function, so set the calling function to use the zero-bit tracking function.