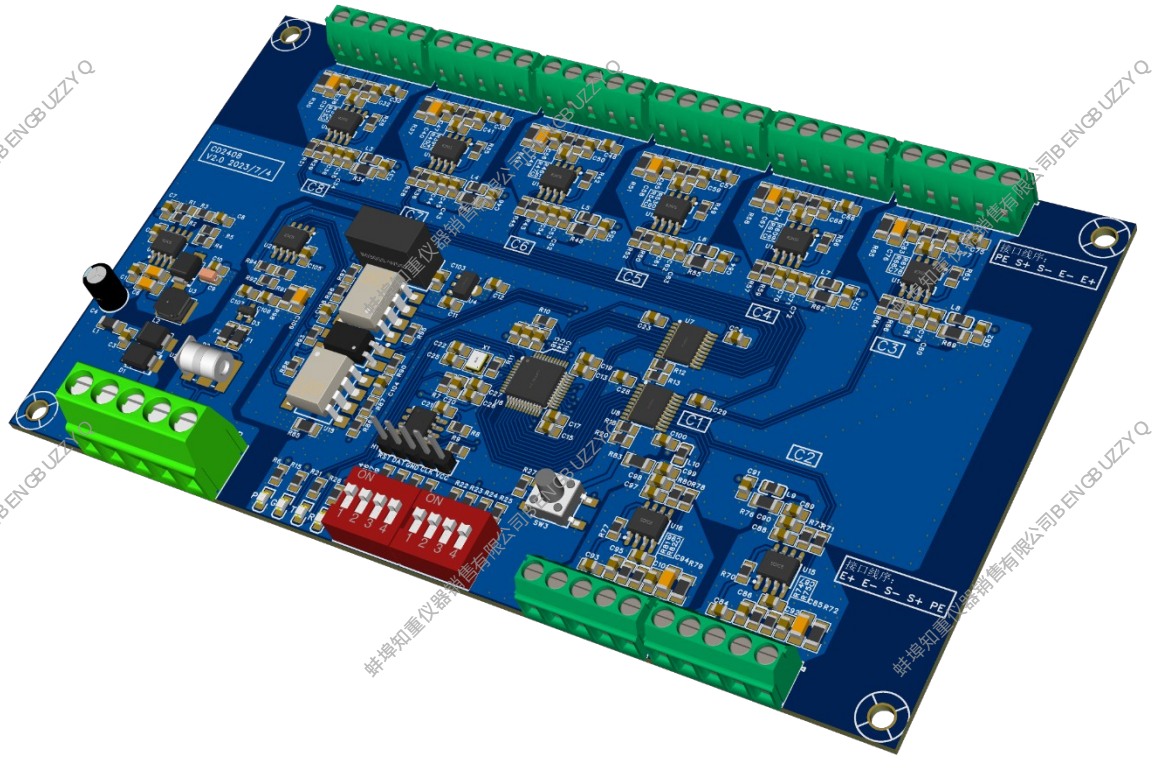
Eight-channel digital weighing transmitter

Instruction manual



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10-point correction calibration Digital calibration Sampling frequency 1280Hz

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1. Declaration

We do our best to improve the robustness and long-term stability of our products, but there is a risk of failure in actual application due to unexpected reasons (such as surge voltage, wiring disconnection, strong vibration, etc.), and failures may cause the product to work abnormally or stop working. Users should analyze the application system of the product and do a good job of systematic abnormal handling of possible failures of the product, so as not to pose a threat to the safe operation of the equipment and the personal safety of the operator. Industrial equipment should be considered from the beginning of the design of mechanical or electrical parts to deal with the fault, and the company shall not be liable for economic loss or personal injury caused by product failure.

2. Overview

This transmitter is a digital weighing transmitter, the transmitter can be directly connected to the Wheatstone resistive bridge pull/pressure sensor, through the internal signal amplification circuit and AD acquisition circuit to convert the microvoltage analog signal of the sensor into a digital signal, the microprocessor built in the module supports the calibration algorithm, after the calibration operation, it can directly read the real-time weight value from the 485 interface, and the 485 interface output of the module supports Modbus - RTU protocol.

The standard Modbus - RTU communication protocol allows the module to be easily connected with PLC, DCS, microcomputer and other devices as a weighing front-end signal processing module.

3. Technical specifications

3.1 General technical specifications

Power supply DC 10-28VDC

Power consumption <2W

The operating current varies depending on the number of external sensors and the supply voltage Drive capacity is 500mA

Applicable ambient temperature -40~85 C

Humidity 0%~95% without condensation

Isolation Protection Optocoupler Isolation Power Isolation Anti-Surge Protection (Basic None

IP65 degree of protection

Mounting method Mounting hole fixed/track fixed

Weight ≈ 250g

3.2 Sensor interface performance

Applicable Sensor Types Suitable for all Wheatstone resistive strain gauge sensors

Sensor excitation voltage 5VDC±3%

Sensor Drive Capability Four 350Ω sensors in a single channel

Number of channels: 6-8 channels

Input signal range 0-±30mV

Temperature coefficient ≤ 0.01%+0.3d/°C of the reading

Nonlinear error ≤0.003%F· S

Stable resolution 1/500000

Sample rate 10Hz, 40Hz, 640Hz, 1280Hz

Sampling method Sig Delta AD

3.3 Communication interface

Communication method RS485

Communication protocol Standard modbus RTU protocol supports 03, 06, 16 (0X10) function codes

Baud rate 2400 4800 9600 19200 28800 38400 57600 115200 128000 230400 256000 460800 500000

512000 600000 (Support Software & DIP)

slave software address 1-255 broadcast address 254

Slave dial addresses 0-15

3.4 Factory default parameters

Porter rate	Data bits	stop position	Check position	Module address	CRC byte order	Data byte order
115200	8	1	None	1	Small end mode	2143

4. Detailed explanation of registers

All registers are located in the power-down hold register area in the Modbus protocol, each register is a 16-bit number, and some functions in the module are represented in a 32-bit way, for example, the real-time weight value register is a 32-bit signed representation method, and the 32-bit number is represented by using two adjacent registers to form a 32-bit number, in which the register with a small address is a low word in the 32-bit number. All 32-bit registers should be read and written in a 32-bit signed manner, although sometimes it is correct to read only the low character display in the 32-bit register in the 16-bit way, but there are often display exceptions when doing so when negative and large numbers.

The register layout of the module is as follows:

Internal address		PLC Address	RMS type		Read and write	Function	Function description:
decimal	Hexadecimal						
0	0X0000	40001	32 bits are signed	Low words	R	First way real-time weight	The high position is in the front, and the low position is behind, forming a 32-bit signed data type, with the first digit being 0 representing a positive number and 1 representing a negative number. Complement code of positive number = original code Complement of negative numbers = {original code symbol bit remains unchanged} + {value bit is reversed by bit+1} The customer only needs to define a variable of a signed type during use, and the computer automatically converts the final result.
1	0X0001	40002		High character			
2	0X0002	40003	32 bits are signed	Low words	R	2nd way real-time weight	
3	0X0003	40004		High character			
4	0X0004	40005	32 bits are signed	Low words	R	3rd way real-time weight	
5	0X0005	40006		High character			
6	0X0006	40007	32 bits are signed	Low words	R	Fourth way real-time weight	
7	0X0007	40008		High character			
8	0X0008	40009	32 bits are	Low word	R	Fifth way real-time weight	

			signed	s			
9	0X0009	40010		High character			
10	0X000A	40011	32 bits are signed	Low words	R	Sixth way real-time weight	
11	0X000B	40012		High character			
12	0X000C	40013	32 bits are signed	Low words	R	Seventh way real-time weight	
13	0X000D	40014		High character			
14	0X000E	40015	32 bits are signed	Low words	R	Eighth way real-time weight	
15	0X000F	40016		High character			
16	0X0010	40017	32 bits are signed	Low words	R	Ninth way real-time weight	Reserved
17	0X0011	40018		High character			
18	0X0012	40019	32 bits are signed	Low words	R	10th way real-time weight	Reserved
19	0X0013	40020		High character			
20	0X0014	40021	32 bits are signed	Low words	R	Eleventh way real-time weight	Reserved
21	0X0015	40022		High character			
22	0X0016	40023	32 bits are signed	Low words	R	The twelfth way is the real-time weight	Reserved
23	0X0017	40024		High character			
24	0X0018	40025	Reserved				

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25	0X0019	40026	Reserved			
26	0X001A	40027	Reserved			
27	0X001B	40028	16-bit unsigned	R	Ambient temperature	Range: 0~1800 The actual temperature needs to be subtracted by 550
28	0X001C	40029	16-bit unsigned	R/W	Module address	Range 1~255 defaults to 1 Write the corresponding value to the register, that is, modify the module software address (all dial addresses need to be zeroed), and 254 is the broadcast address
29	0X001D	40030	16-bit unsigned	R/W	Porter rate	The range 1~15 defaults to 8 1=2400 2=4800 3=9600 4=19200 5=28800 6=38400 7=57600 8=115200 9=128000 10=230400 11=256000 12=460800 13=500000 14=512000 15=600000 The baud rate modification takes effect immediately and needs to be powered off and reconnected
30	0X001E	40031	16-bit unsigned	R/W	Communication rate	10Hz, 40Hz, 640Hz, 1280Hz optional, default is 40Hz, the sample rate is greater than 40Hz, pay attention to choosing the appropriate baud rate.
Registers 31 to 36 are total parameter registers, and if you need to modify the parameters of each channel in batches, you can use the total parameter register						
31	0X001F	40032	16-bit unsigned	W	(Total) index value	Ranges 1,2,5,10,20,50,100 default to 1 The index value is used to limit the output digit minimum runout value of the weight value output register. When the register is set to a 2-index value, the output weight will only be an even number, and when the register is set to 5, the weight value register will only output a multiple weight value of 5.
32	0X0020	40033	16-bit unsigned	W	(Total) zero chasing range	Range 1~50, default to 3 When the detected weight is within this range and in steady state, after multiple acquisitions and judgments, the automatic zero chasing operation is carried out, and the zero chasing range is independent of the index value.
33	0X0021	40034	16-bit unsigned	W	(Total) Zero Chase Enabled	Range 0~3, default to 3 0: Turn off the boot and dynamic zero chasing 1: Only turn on the power on, set zero, and turn off dynamic zero chasing 2: Turn off the boot and set zero and only turn on dynamic zero chasing 3: Turn on the boot and set zero and dynamic zero chasing
34	0X0022	40035	16-bit unsigned	W	(Total) filter depth	Range 1~50 defaults to 10 Take several consecutive periods of data, calculate its average value, and output stable data with small fluctuations, which customers can set according to actual needs.
35	0X0023	40036	16-bit unsigned	W	(Total) creep tracking	Range 0~10 defaults to 5 If the sensor is continuously charged for a long time, the output value will drift, increase or decrease, and be corrected by setting this parameter.
36	0X0024	40037	16-bit unsigned	W	(Total) dynamic	The range 0~50 defaults to 1

					tracking	For example, if the parameter is set to 5, then the output data fluctuates at 100±5, and the module will stably output 100, and only when the fluctuation is greater than 5, it will be re-collected.
37	0X0025	40038			Reserved	
38	0X0026	40039	16-bit unsigned	W	Command register	1: Peel everything to zero 9: Factory reset
39	0X0027	40040	16-bit unsigned	R	(Total) dynamic tracking refresh frequency	Range 0~50 See 6.1 for details
The following are the parameters of the single register						
The first lane / each lane accounts for 10 registers						
40	0X0028	40041	16-bit unsigned	R/W	Command register	1: Zero Point Calibration 2: Peeling
41	0X0029	40042	16-bit unsigned	R/W	Weight value	Range: 20~65535 Represents the weight value of the calibration (the weight weight is not without decimal point), so when the actual weight is calibrated as 100.00, the value filled in should be 10000, and the user device reads the weight value and adds a decimal point by itself, and writes the weight value to the register to achieve single-point weight calibration.
42	0X002A	40043	16-bit unsigned	R/W	Index value	Ranges 1,2,5,10,20,50,100 default to 1 The index value is used to limit the output digit minimum runout value of the weight value output register. When the register is set to a 2-index value, the output weight will only be an even number, and when the register is set to 5, the weight value register will only output a multiple weight value of 5.
43	0X002B	40044	16-bit unsigned	R/W	Chasing zero range	Range 1~50, default to 3 When the detected weight is within this range and in steady state, after multiple acquisitions and judgments, the automatic zero chasing operation is carried out, and the zero chasing range is independent of the index value.
44	0X002C	40045	16-bit unsigned	R/W	Zero Catch Enable	Range 0~3, default to 3 0: Turn off the boot and dynamic zero chasing 1: Only turn on the power on, set zero, and turn off dynamic zero chasing 2: Turn off the boot and set zero and only turn on dynamic zero chasing 3: Turn on the boot and set zero and dynamic zero chasing
45	0X002D	40046	16-bit unsigned	R/W	Filter depth	Range 1~50 defaults to 10 Take several consecutive periods of data, calculate its average value, and output stable data with small fluctuations, which customers can set according to actual needs.
46	0X002E	40047	16-bit unsigned	R/W	Creep tracking	Range 0~10 defaults to 5 If the sensor is continuously charged for a long time, the output value will drift, increase or decrease, and be corrected

						by setting this parameter.
47	0X002F	40048	16-bit unsigned	R/W	Dynamic tracking	The range 0~50 defaults to 1 For example, if the parameter is set to 5, then the output data fluctuates at 100±5, and the module will stably output 100, and only when the fluctuation is greater than 5, it will be re-collected.
48	0X0030	40049	16-bit unsigned	R/W	Median filtering	Ranges 1, 3, 5, 7, 9 default to 3 It refers to the stable output of 3 AD acquisitions through internal acquisition, the larger the median filter setting, the more stable it is, but the module processing time is long, it is recommended to use the default value 3.
49	0X0031	40050	16-bit unsigned	R/W	Dynamically track the refresh frequency	Range 0~50 See 6.1 for details
The second lane / each lane accounts for 10 registers						
50	0X0032	40051	16-bit unsigned	R/W	Command register	1: Zero Point Calibration 2: Peeling
51	0X0033	40052	16-bit unsigned	R/W	Weight value	Range 20~65535 without decimal point
52	0X0034	40053	16-bit unsigned	R/W	Index value	Ranges 1,2,5,10,20,50,100 default to 1
53	0X0035	40054	16-bit unsigned	R/W	Chasing zero range	Range 1~50, default to 3
54	0X0036	40055	16-bit unsigned	R/W	Zero Catch Enable	Range 0~3, default to 3
55	0X0037	40056	16-bit unsigned	R/W	Filter depth	Range 1~50 defaults to 10
56	0X0038	40057	16-bit unsigned	R/W	Creep tracking	Range 0~10 defaults to 5
57	0X0039	40058	16-bit unsigned	R/W	Dynamic tracking	The range 0~50 defaults to 1
58	0X003A	40059	16-bit unsigned	R/W	Median filtering	Ranges 1, 3, 5, 7, 9 default to 3
59	0X003B	40060	16-bit unsigned	R/W	Dynamically track the refresh frequency	Range 0~50 See 6.1 for details
The third lane / each lane accounts for 10 registers						
60	0X003C	40061	16-bit unsigned	R/W	Command register	1: Zero Point Calibration 2: Peeling
61	0X003D	40062	16-bit unsigned	R/W	Weight value	Range 20~65535 without decimal point
62	0X003E	40063	16-bit unsigned	R/W	Index value	Ranges 1,2,5,10,20,50,100 default to 1
63	0X003F	40064	16-bit unsigned	R/W	Chasing zero range	Range 1~50, default to 3
64	0X0040	40065	16-bit unsigned	R/W	Zero Catch Enable	Range 0~3, default to 3
65	0X0041	40066	16-bit unsigned	R/W	Filter depth	Range 1~50 defaults to 10
66	0X0042	40067	16-bit unsigned	R/W	Creep tracking	Range 0~10 defaults to 5
67	0X0043	40068	16-bit unsigned	R/W	Dynamic tracking	The range 0~50 defaults to 1

68	0X0044	40069	16-bit unsigned	R/W	Median filtering	Ranges 1, 3, 5, 7, 9 default to 3
69	0X0045	40070	16-bit unsigned	R/W	Dynamically track the refresh frequency	Range 0~50 See 6.1 for details
The fourth lane / each lane accounts for 10 registers						
70	0X0046	40071	16-bit unsigned	R/W	Command register	1: Zero Point Calibration 2: Peeling
71	0X0047	40072	16-bit unsigned	R/W	Weight value	Range 20~65535 without decimal point
72	0X0048	40073	16-bit unsigned	R/W	Index value	Ranges 1,2,5,10,20,50,100 default to 1
73	0X0049	40074	16-bit unsigned	R/W	Chasing zero range	Range 1~50, default to 3
74	0X004A	40075	16-bit unsigned	R/W	Zero Catch Enable	Range 0~3, default to 3
75	0X004B	40076	16-bit unsigned	R/W	Filter depth	Range 1~50 defaults to 10
76	0X004C	40077	16-bit unsigned	R/W	Creep tracking	Range 0~10 defaults to 5
77	0X004D	40078	16-bit unsigned	R/W	Dynamic tracking	The range 0~50 defaults to 1
78	0X004E	40079	16-bit unsigned	R/W	Median filtering	Ranges 1, 3, 5, 7, 9 default to 3
79	0X004F	40080	16-bit unsigned	R/W	Dynamically track the refresh frequency	Range 0~50 See 6.1 for details
The fifth lane / each lane accounts for 10 registers						
80	0X0050	40081	16-bit unsigned	R/W	Command register	1: Zero Point Calibration 2: Peeling
81	0X0051	40082	16-bit unsigned	R/W	Weight value	Range 20~65535 without decimal point
82	0X0052	40083	16-bit unsigned	R/W	Index value	Ranges 1,2,5,10,20,50,100 default to 1
83	0X0053	40084	16-bit unsigned	R/W	Chasing zero range	Range 1~50, default to 3
84	0X0054	40085	16-bit unsigned	R/W	Zero Catch Enable	Range 0~3, default to 3
85	0X0055	40086	16-bit unsigned	R/W	Filter depth	Range 1~50 defaults to 10
86	0X0056	40087	16-bit unsigned	R/W	Creep tracking	Range 0~10 defaults to 5
87	0X0057	40088	16-bit unsigned	R/W	Dynamic tracking	The range 0~50 defaults to 1
88	0X0058	40089	16-bit unsigned	R/W	Median filtering	Ranges 1, 3, 5, 7, 9 default to 3
89	0X0059	40090	16-bit unsigned	R/W	Dynamically track the refresh frequency	Range 0~50 See 6.1 for details
The sixth lane / each lane accounts for 10 registers						
90	0X005A	40091	16-bit unsigned	R/W	Command register	1: Zero Point Calibration 2: Peeling
91	0X005B	40092	16-bit unsigned	R/W	Weight value	Range 20~65535 without decimal point

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92	0X005C	40093	16-bit unsigned	R/W	Index value	Ranges 1,2,5,10,20,50,100 default to 1
93	0X005D	40094	16-bit unsigned	R/W	Chasing zero range	Range 1~50, default to 3
94	0X005E	40095	16-bit unsigned	R/W	Zero Catch Enable	Range 0~3, default to 3
95	0X005F	40096	16-bit unsigned	R/W	Filter depth	Range 1~50 defaults to 10
96	0X0060	40097	16-bit unsigned	R/W	Creep tracking	Range 0~10 defaults to 5
97	0X0061	40098	16-bit unsigned	R/W	Dynamic tracking	The range 0~50 defaults to 1
98	0X0062	40099	16-bit unsigned	R/W	Median filtering	Ranges 1, 3, 5, 7, 9 default to 3
99	0X0063	40100	16-bit unsigned	R/W	Dynamically track the refresh frequency	Range 0~50 See 6.1 for details
The seventh lane / each lane accounts for 10 registers						
100	0X0064	40101	16-bit unsigned	R/W	Command register	1: Zero Point Calibration 2: Peeling
101	0X0065	40102	16-bit unsigned	R/W	Weight value	Range 20~65535 without decimal point
102	0X0066	40103	16-bit unsigned	R/W	Index value	Ranges 1,2,5,10,20,50,100 default to 1
103	0X0067	40104	16-bit unsigned	R/W	Chasing zero range	Range 1~50, default to 3
104	0X0068	40105	16-bit unsigned	R/W	Zero Catch Enable	Range 0~3, default to 3
105	0X0069	40066	16-bit unsigned	R/W	Filter depth	Range 1~50 defaults to 10
106	0X006A	40107	16-bit unsigned	R/W	Creep tracking	Range 0~10 defaults to 5
107	0X006B	40108	16-bit unsigned	R/W	Dynamic tracking	The range 0~50 defaults to 1
108	0X006C	40109	16-bit unsigned	R/W	Median filtering	Ranges 1, 3, 5, 7, 9 default to 3
109	0X006D	40110	16-bit unsigned	R/W	Dynamically track the refresh frequency	Range 0~50 See 6.1 for details
The eighth lane / each lane accounts for 10 registers						
110	0X006E	40111	16-bit unsigned	R/W	Command register	1: Zero Point Calibration 2: Peeling
111	0X006F	40112	16-bit unsigned	R/W	Weight value	Range 20~65535 without decimal point
112	0X0070	40113	16-bit unsigned	R/W	Index value	Ranges 1,2,5,10,20,50,100 default to 1
113	0X0071	40114	16-bit unsigned	R/W	Chasing zero range	Range 1~50, default to 3
114	0X0072	40115	16-bit unsigned	R/W	Zero Catch Enable	Range 0~3, default to 3
115	0X0073	40116	16-bit unsigned	R/W	Filter depth	Range 1~50 defaults to 10
116	0X0074	40117	16-bit unsigned	R/W	Creep tracking	Range 0~10 defaults to 5
117	0X0075	40118	16-bit unsigned	R/W	Dynamic tracking	The range 0~50 defaults to 1

118	0X0076	40119	16-bit unsigned	R/W	Median filtering	Ranges 1, 3, 5, 7, 9 default to 3
119	0X0077	40120	16-bit unsigned	R/W	Dynamically track the refresh frequency	Range 0~50 See 6.1 for details

Multi-point calibration register assignment

decimal	Hexadecimal	PLC Address	Function	Function description:	decimal	Hexadecimal	PLC Address	Function	Function description:
The first lane/each lane accounts for 11 registers					**The second way/each lane accounts for 11 registers**				
182	0X00B6	40183	Calibration method	0: Weight calibration 1-10: Multi-point calibration FF: Digital calibration	193	0X00C1	40194	Calibration method	0: Weight calibration 1-10: Multi-point calibration FF: Digital calibration
183	0X00B7	40184	The first point is the weight value	Range: 20~65535	194	0X00C2	40195	The first point is the weight value	Range: 20~65535
184	0X00B8	40185	The second point is the weight value	Range: 20~65535	195	0X00C3	40196	The second point is the weight value	Range: 20~65535
185	0X00B9	40186	The third point is the weight value	Range: 20~65535	196	0X00C4	40197	The third point is the weight value	Range: 20~65535
186	0X00BA	40187	The fourth point is the weight value	Range: 20~65535	197	0X00C5	40198	The fourth point is the weight value	Range: 20~65535
187	0X00BB	40188	The fifth point is the weight value	Range: 20~65535	198	0X00C6	40199	The fifth point is the weight value	Range: 20~65535
188	0X00BC	40189	The sixth point is the weight value	Range: 20~65535	199	0X00C7	40200	The sixth point is the weight value	Range: 20~65535
189	0X00BD	40190	The seventh point is the weight value	Range: 20~65535	200	0X00C8	40201	The seventh point is the weight value	Range: 20~65535
190	0X00BE	40191	Eighth point weight value	Range: 20~65535	201	0X00C9	40202	Eighth point weight value	Range: 20~65535
191	0X00BF	40192	The ninth point is the weight value	Range: 20~65535	202	0X00CA	40203	The ninth point is the weight value	Range: 20~65535
192	0X00C0	40193	The tenth point is the weight	Range: 20~65535	203	0X00CB	40204	The tenth point is the weight	Range: 20~65535

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			value					value	
The third lane / each lane accounts for 11 registers					**The fourth lane / each lane accounts for 11 registers**				
204	0X00CC	40205	Calibration method	0: Weight calibration 1-10: Multi-point calibration FF: Digital calibration	215	0X00D7	40216	Calibration method	0: Weight calibration 1-10: Multi-point calibration FF: Digital calibration
205	0X00CD	40206	The first point is the weight value	Range: 20~65535	216	0X00D8	40217	The first point is the weight value	Range: 20~65535
206	0X00CE	40207	The second point is the weight value	Range: 20~65535	217	0X00D9	40218	The second point is the weight value	Range: 20~65535
207	0X00CF	40208	The third point is the weight value	Range: 20~65535	218	0X00DA	40219	The third point is the weight value	Range: 20~65535
208	0X00D0	40209	The fourth point is the weight value	Range: 20~65535	219	0X00DB	40220	The fourth point is the weight value	Range: 20~65535
209	0X00D1	40210	The fifth point is the weight value	Range: 20~65535	220	0X00DC	40221	The fifth point is the weight value	Range: 20~65535
210	0X00D2	40211	The sixth point is the weight value	Range: 20~65535	221	0X00DD	40222	The sixth point is the weight value	Range: 20~65535
211	0X00D3	40212	The seventh point is the weight value	Range: 20~65535	222	0X00DE	40223	The seventh point is the weight value	Range: 20~65535
212	0X00D4	40213	Eighth point weight value	Range: 20~65535	223	0X00DF	40224	Eighth point weight value	Range: 20~65535
213	0X00D5	40214	The ninth point is the weight value	Range: 20~65535	224	0X00E0	40225	The ninth point is the weight value	Range: 20~65535
214	0X00D6	40215	The tenth point is the weight value	Range: 20~65535	225	0X00E1	40226	The tenth point is the weight value	Range: 20~65535
The fifth lane / each lane accounts for 11 registers					**The sixth lane / each lane accounts for 11 registers**				
226	0X00E2	40227	Calibration method	0: Weight calibration 1-10: Multi-point calibration	237	0X00ED	40238	Calibration method	0: Weight calibration 1-10: Multi-point calibration

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				FF: Digital calibration					FF: Digital calibration
227	0X00E3	40228	The first point is the weight value	Range: 20~65535	238	0X00EE	40239	The first point is the weight value	Range: 20~65535
228	0X00E4	40229	The second point is the weight value	Range: 20~65535	239	0X00EF	40240	The second point is the weight value	Range: 20~65535
229	0X00E5	40230	The third point is the weight value	Range: 20~65535	240	0X00F0	40241	The third point is the weight value	Range: 20~65535
230	0X00E6	40231	The fourth point is the weight value	Range: 20~65535	241	0X00F1	40242	The fourth point is the weight value	Range: 20~65535
231	0X00E7	40232	The fifth point is the weight value	Range: 20~65535	242	0X00F2	40243	The fifth point is the weight value	Range: 20~65535
232	0X00E8	40233	The sixth point is the weight value	Range: 20~65535	243	0X00F3	40244	The sixth point is the weight value	Range: 20~65535
233	0X00E9	40234	The seventh point is the weight value	Range: 20~65535	244	0X00F4	40245	The seventh point is the weight value	Range: 20~65535
234	0X00EA	40235	Eighth point weight value	Range: 20~65535	245	0X00F5	40246	Eighth point weight value	Range: 20~65535
235	0X00EB	40236	The ninth point is the weight value	Range: 20~65535	246	0X00F6	40247	The ninth point is the weight value	Range: 20~65535
236	0X00EC	40237	The tenth point is the weight value	Range: 20~65535	247	0X00F7	40248	The tenth point is the weight value	Range: 20~65535
The seventh lane / each lane accounts for 11 registers					**The eighth way/each lane accounts for 11 registers**				
248	0X00F8	40249	Calibration method	0: Weight calibration 1-10: Multi-point calibration FF: Digital calibration	259	0X0103	40260	Calibration method	0: Weight calibration 1-10: Multi-point calibration FF: Digital calibration
249	0X00F9	40250	The first point is the weight value	Range: 20~65535	260	0X0104	40261	The first point is the weight value	Range: 20~65535
250	0X00FA	40251	The second point is the weight value	Range: 20~65535	261	0X0105	40262	The second point is the weight value	Range: 20~65535
251	0X00FB	40252	The third point	Range:	262	0X0106	40263	The third point	Range:

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			is the weight value	20~65535				is the weight value	20~65535
252	0X00FC	40253	The fourth point is the weight value	Range: 20~65535	263	0X0107	40264	The fourth point is the weight value	Range: 20~65535
253	0X00FD	40254	The fifth point is the weight value	Range: 20~65535	264	0X0108	40265	The fifth point is the weight value	Range: 20~65535
254	0X00FE	40255	The sixth point is the weight value	Range: 20~65535	265	0X0109	40266	The sixth point is the weight value	Range: 20~65535
255	0X00FF	40256	The seventh point is the weight value	Range: 20~65535	266	0X010A	40267	The seventh point is the weight value	Range: 20~65535
256	0X0100	40257	Eighth point weight value	Range: 20~65535	267	0X010B	40268	Eighth point weight value	Range: 20~65535
257	0X0101	40258	The ninth point is the weight value	Range: 20~65535	268	0X010C	40269	The ninth point is the weight value	Range: 20~65535
258	0X0102	40259	The tenth point is the weight value	Range: 20~65535	269	0X010D	40270	The tenth point is the weight value	Range: 20~65535

Digital calibration register assignment (weightless calibration)

The first pass/each channel occupies 4 registers (digital calibration is valid).

decimal	Hexadecimal	PLC Address	RMS type	Function	Function description:
314	0X013A	40315	16-bit unsigned	Total sensor range	Range 20-65535, because the data type is unsigned, so this parameter has no decimal point
315	0X013B	40316	16-bit unsigned	Sensor sensitivity	For example, if the sensor sensitivity is 2.0mv/v, the corresponding range of this parameter is 2000, and if the sensor sensitivity is 1.542mv/v, the corresponding range of this parameter is 1542
316	0X013C	40317	16-bit unsigned	Voltage correction ratio	This parameter is 1,1000=1.000 by default, and this parameter does not need to be modified because the voltage reference of this module is directly input to the AD sampling chip
317	0X013D	40318	16-bit unsigned	Range correction factor	This parameter is 1 by default, affected by the sampling accuracy, sensor sensitivity error, etc., there is a certain error in the digital calibration, and this coefficient can be corrected for the linearity of the sensor, 10000=1.0000

The second channel/each channel accounts for 4 registers (digital calibration is valid).

decimal	Hexadecimal	PLC Address	RMS type	Function	Function description:
318	0X013E	40319	16-bit unsigned	Total sensor range	Range 20-65535, because the data type is unsigned, so this parameter has no decimal point
319	0X013F	40320	16-bit unsigned	Sensor sensitivity	For example, if the sensor sensitivity is 2.0mv/v, the corresponding range of this parameter is 2000, and if the sensor sensitivity is

					1.542mv/v, the corresponding range of this parameter is 1542
320	0X0140	40321	16-bit unsigned	Voltage correction ratio	This parameter is 1,1000=1.000 by default, and this parameter does not need to be modified because the voltage reference of this module is directly input to the AD sampling chip
321	0X0141	40322	16-bit unsigned	Range correction factor	This parameter is 1 by default, affected by the sampling accuracy, sensor sensitivity error, etc., there is a certain error in the digital calibration, and this coefficient can be corrected for the linearity of the sensor, 10000=1.0000

The third channel/each channel occupies 4 registers (digital calibration is valid).					**The fourth channel/each channel accounts for 4 registers (digital calibration is valid).**				
decimal	Hexadecimal	PLC Address	Function	Function description:	decimal	Hexadecimal	PLC Address	Function	Function description:
322	0X0142	40323	Total sensor range	Range: 20~65535	326	0X0146	40327	Total sensor range	Range: 20~65535
323	0X0143	40324	Sensor sensitivity	2.0mv/v=2000	327	0X0147	40328	Sensor sensitivity	2.0mv/v=2000
324	0X0144	40325	Voltage correction ratio	The default is 1.000, 1.000=1000	328	0X0148	40329	Voltage correction ratio	The default is 1.000, 1.000=1000
325	0X0145	40326	Sensor range correction factor	The default is 1.0000, 1.0000=10000	329	0X0149	40330	Sensor range correction factor	The default is 1.0000, 1.0000=10000

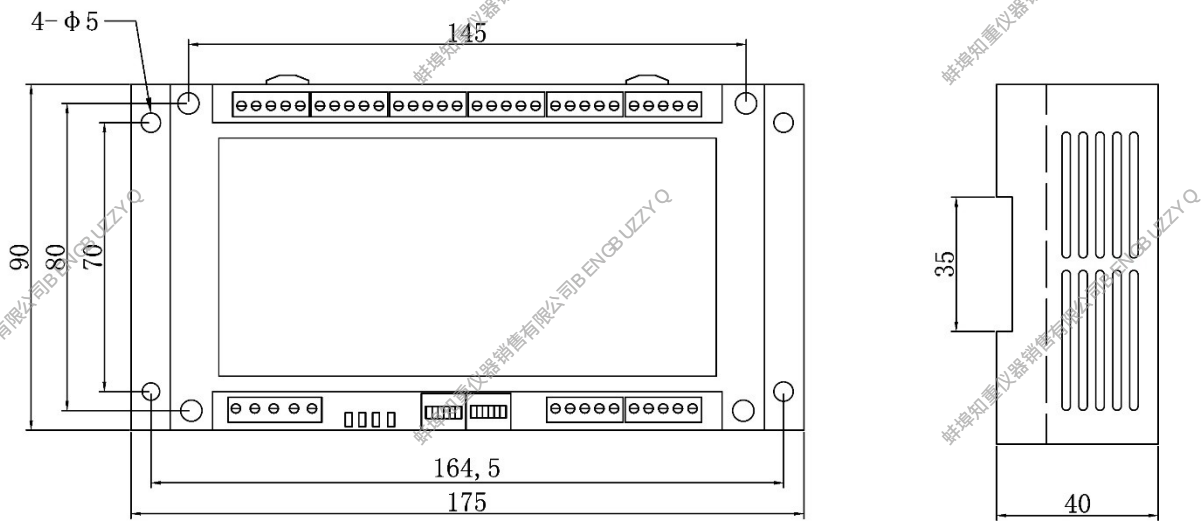
Fifth channel/each channel accounts for 4 registers (digital calibration is valid).					**The sixth channel/each channel occupies 4 registers (digital calibration is valid).**				
decimal	Hexadecimal	PLC Address	Function	Function description:	decimal	Hexadecimal	PLC Address	Function	Function description:
330	0X014A	40331	Total sensor range	Range: 20~65535	334	0X014E	40335	Total sensor range	Range: 20~65535
331	0X014B	40332	Sensor sensitivity	2.0mv/v=2000	335	0X014F	40336	Sensor sensitivity	2.0mv/v=2000
332	0X014C	40333	Voltage correction ratio	The default is 1.000, 1.000=1000	336	0X0150	40337	Voltage correction ratio	The default is 1.000, 1.000=1000
333	0X014D	40334	Sensor range correction factor	The default is 1.0000, 1.0000=10000	337	0X0151	40338	Sensor range correction factor	The default is 1.0000, 1.0000=10000

7th channel/4 registers each (digital calibration valid).					**The eighth channel / each channel accounts for 4 registers (digital calibration is valid).**				
decimal	Hexadecimal	PLC Address	Function	Function description:	decimal	Hexadecimal	PLC Address	Function	Function description:
338	0X0152	40339	Total sensor range	Range: 20~65535	342	0X0156	40343	Total sensor range	Range: 20~65535
339	0X0153	40340	Sensor sensitivity	2.0mv/v=2000	343	0X0157	40344	Sensor sensitivity	2.0mv/v=2000
340	0X0154	40341	Voltage	The default is	344	0X0158	40345	Voltage	The default is

			correction ratio	1.000, 1.000=1000				correction ratio	1.000, 1.000=1000
341	0X0155	40342	Sensor range correction factor	The default is 1.0000, 1.0000=10000	345	0X0159	40346	Sensor range correction factor	The default is 1.0000, 1.0000=10000

5. Installation

5.1 Installation and overall dimensions



5.2 Installation environment

♦ This transmitter is a precision electronic instrument, and the installation, connection and operation should be very careful.

♦ Although this product meets the industrial grade temperature range, to ensure the accuracy of this transmitter, please avoid installing the transmitter in direct sunlight or in an environment where the temperature can change suddenly.

♦ Make sure the transmitter has enough space to breathe and dissipate heat.

♦ The transmitter can only protect against normal splashing water and should not be used in a long-term immersion environment.

♦ Please avoid violent vibration and impact of this transmitter.

♦ Do not install this transmitter in any place where there is a risk of explosion.

5.3 Wiring definition

◆When the module is connected to the power cable, it should ensure that the power cable is not supplied to prevent short circuit or accidental contact with the low-voltage signal line inside the module due to the lack of fixed wire head.

◆The sensor wire color definition of each manufacturer may be different, so the following figure does not give a wiring diagram with color, to prevent customers from misreferring to lead to wiring errors, please determine the line color definition of the sensor with the sensor manufacturer before wiring.

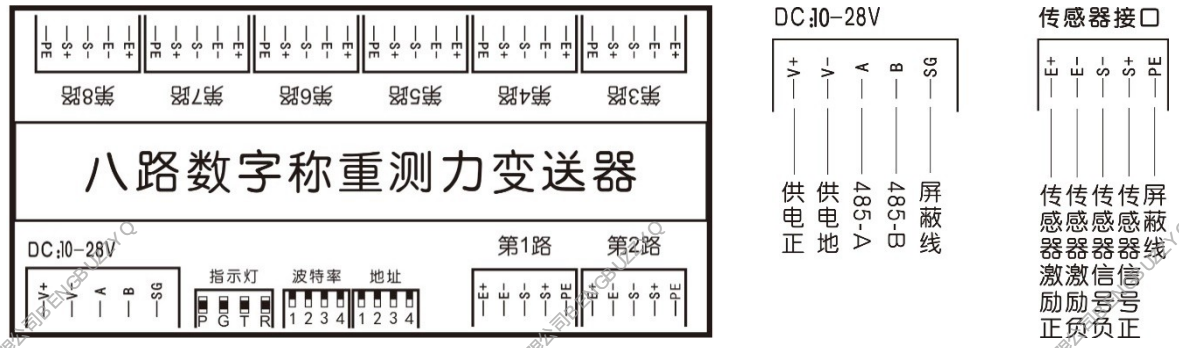
◆The excitation and signal lines of the sensor must only be connected to the module, and the external excitation signal cannot be used, nor can any wiring of the sensor be shared with other acquisition modules, otherwise it will cause the module to be unusable or damaged.

◆The wiring of the sensor should be sorted out before the calibration operation, and the wire should not be moved or bent greatly after calibration, otherwise it is possible

It can lead to measurement errors.

◆All wiring should be pressed tightly inside the terminals to prevent system abnormalities caused by loose falling off or poor contact.

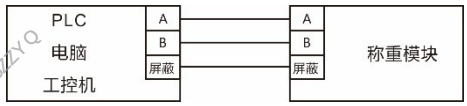
◆The excitation voltage of the module is only used for sensor drive, not for driving other loads.



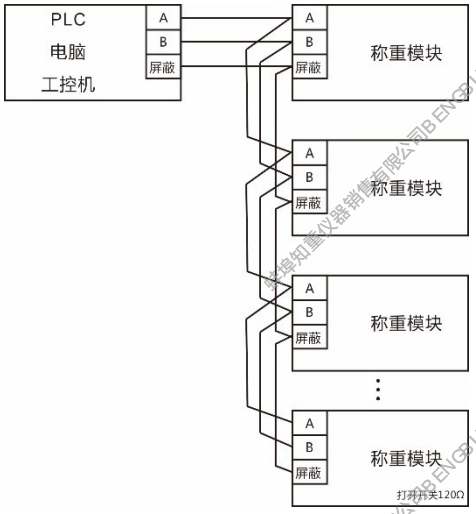
Transmitter panel Wiring definition

5.4 RS485 interface

The 485 wiring diagram is shown below:



One-on-one



The RS485 interface is used, and the maximum transmission distance of the interface is as a communication channel

At a baud rate of 9600 meters at 1200 meters, up to 32 devices can be cascaded on the same bus

In short-distance debugging, it can be connected with ordinary direct wires, and it can be built when it is actually used

The A and B lines of Proposal 485 are twisted pairs, and the shielding uses direct connecting wires, when the distance is long

Twisted pair shielding wires should be used. When using one-to-many connection, the end module 485A and 485B parallel 120Ω resistor.

One-to-many

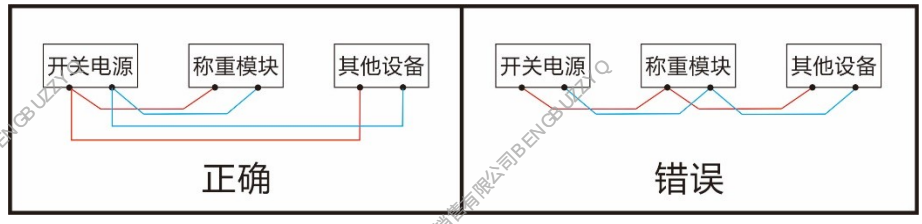
5.5 Power supply

♢ Power supply: 7~28VDC, sufficient capacity, no transient, clutter signal.

♢ Condensation can form inside the transmitter, so it is recommended to always turn on the power to the transmitter or open the lid regularly to check for condensation.

♢ Use the appropriate power cord and make sure that the rated voltage or current of the power cord meets the requirements, if there is not enough female fruit, it may cause leakage or fire.

♢ In particular, when drawing power from multiple machines, please connect the power cord as follows:

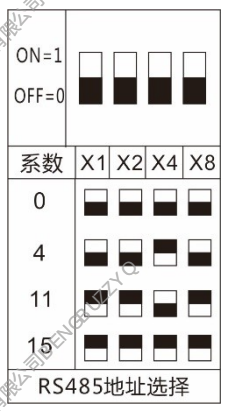


5.6 Station address

The communication protocol supported by the module Modbus - RTU is the master-slave mode, that is, each communication process is initiated by the host PLC, DCS, computer, the command sent by the host contains the station address of the operated module, only the station address in the command is consistent with the station address set by the module, the module will respond, this module supports station

address 0-15 (see Figure 4-3-1 for the dial address) and address offset register 1-255 (software setting address).

If the address offset register of the module is misconfigured or the last written value is forgotten, it will cause the problem of not being able to get the actual station address. In this regard, we added a broadcast address to solve the problem, the value of the broadcast address is 254, that is, when using this address to communicate with the module, no matter what the actual station address of the module is, it will respond, if multiple devices are mounted on the 485 bus, this address cannot be used to communicate, because the command will cause all modules to reply data. The 485 bus does not allow multiple devices to send data at the same time, so it will cause bus data conflicts, and the host cannot receive the reply instruction 254 The correct usage of the broadcast address is to keep only one device on the bus.



,

Dial up the dial represents 1, dial down represents 0, and then multiply the 4-digit dial by the corresponding coefficient, and then add the product to get the number

The value is the address of the station.

For example:

The first dial is dialed, and the rest are all dialed, 1×1+0×2+0×4+0×8=1

All four digits are dialed, 0×1+0×2+0×4+0×8=0

The third digit is dialed up, and the rest are all dialed, 0×1+0×2+1×4+0×8=4

The third digit is dialed down, and the rest are all dialed, 1×1 + 1×2 + 0×4 + 1×8 = 11

All four digits are dialed, 1×1+1×2+1×4+1×8=15

5.7 DIP baud rate

The dialting method of baud rate is the same as that of 4.6 station addresses, and there are also 15 dials, as shown in the figure above

1=2400 2=4800 3=9600 4=19200 5=28800 6=38400 7=57600 8=115200 9=128000 10=230400 11=256000

12=460800 13=500000 14=512000 15=600000

5.8 Indicator Light and Reset

This transmitter module has four working indicators for working status indication, the position of the indicator lights refers to the transmitter panel diagram, namely power indicator, communication indicator, transmit indicator and receive indicator, the four indicator lights are green, the power indicator light is always on after the module is powered on, the communication indicator is flashing state, the flashing frequency is different according to the selected communication rate, the remaining two indicator lights default to the off state, defined as follows: The instructions received or sent by the indicator light conform to Modbus - RTU If the host stops sending the command after the indicator light is turned off, the transmitting and receiving indicator light will always be off.

The right button of the indicator light is the reset button, (in order to prevent misoperation, the button position is slightly close to the inside of the interface) in the power-on state, press the button for more than three seconds, at this time the four indicator lights flash at the same time, that is, the factory setting is successfully restored. Since all parameters are cleared after reset, including calibration parameters, this function should be used with caution, and if the slave address is forgotten and cannot communicate, the dial address and broadcast address will be applied first.



P: Power Indicator (Solid On)

G: Communication indicator (flashing)

T: Transmit indicator (working status flashes, otherwise it will turn off)

R: Receive indicator (working status flashes, otherwise it will turn off)

6. Communication examples

The following examples are all internal register addresses, if controlled by PLC, internal register 0 = PLC address 40001

6.1 Read the first real-time weight

Send: 01 03 00 00 00 02 C4 0B

Analysis:

01 Module station address

03 Read save registers

00 00 reads from the address of save register 0

00 02 Read the values of 2 registers

C4 0B CRC16 checksum

Received: 01 03 04 04 D2 00 00 5B 3A

Analysis:

01 Module station address

03 Read and save the register reply

04 Valid data length is 4 bytes

04 D2 The value of the first register

00 00 The value of the second register

5B 3A CRC16 checksum

6.2 Modify the internal software address

Example: The original cluster address = 1, now changed to 2

Send: 01 06 00 1C 00 02 C9 CD

Analysis:

01 Module station address

06 Write Save Register (Single Register Write Command)

00 1C register address is 28

00 02 Write data 2

C9 CD CRC16 checksum

Write address 2 to be reset to register 28

Note: The address will take effect immediately after the modification, and you need to select a new address before you can exchange data.

6.3 Modifying the baud rate

Example: Modify the baud rate to 500000, and the default baud rate is 115200

Send: 01 06 00 1D 00 0D D8 09 (write 13 to register 0x001D, look at register table, 13 represents bit rate 500000, 13 converts 16 to 0D)

Note: The modification of the baud rate takes effect immediately and needs to be powered off and reconnected

6.4 Modify the communication rate

Example: Modify the communication rate to 1280Hz

Send: 01 06 00 1E 05 00 EA 9C (write 1280 to register 0x001E, 1280 convert 1280 to 05 00)

6.5 The first zero point calibration and peeling

Send: 01 06 00 28 00 01 C8 02

Analysis:

01 Module station address

06 Write Save Register (Single Register Write Command)

00 28 register address is 40 (00 28 is hexadecimal)

00 01 Write data 1

C8 02 CRC16 checksum

If the sensor is unloaded, write 1 to register 40 to complete the zero point calibration of the first pass

Send: 01 06 00 28 00 02 88 03

Analysis: (calibrated with zero point)

Writing 2 to register 40 completes the first stripping operation

6.6 First Way Weight Calibration

Complete the zero point calibration before weight calibration, and then load the weights

Send: 01 06 00 28 00 01 C8 02 (1st Zero Point Calibration)

Send: 01 06 00 29 01 F4 58 15 (1st Way Weight Calibration)

Analysis:

01 Module station address

06 Write Save Register (Single Register Write Command)

00 29 Write to the address of the register, hexadecimal 0X0029, convert decimal to 41

01 F4 The write value is 500, and 500 is converted to a hexadecimal value of 01 F4, if the weight value is 1000, the write value is 03 E8, and pay attention to modifying and changing the CRC16 checksum

58 15 CRC16 checksum

6.7 Multi-point polyline calibration

In order to improve accuracy, this product supports up to 10 points of calibration, the following takes the first 5-point calibration as an example, the weight values are 100, 500, 1000, 2000, 3000, corresponding to the hexadecimal are 00 64, 01 F4, 03 E8, 07 D0, 0B B8, write these 5 values to the corresponding register. (See register details)

Send: 01 06 00 B6 00 05 A8 2F

(Turn on the first multi-point calibration enable, write the register 0x00B6 to 5 to turn on the 5-point polyline correction, if you need 10 points, change 5 to 10, pay attention to changing the CRC16 checksum)

Send: 01 06 00 B7 00 64 38 07 (write the weight value 100 to the register 0X00B7) First point of weight calibration

Send: 01 06 00 B8 01 F4 09 F8 (write the weight value 500 to the register 0X00B8) Second point of weight calibration

Send: 01 06 00 B9 03 E8 58 91 (write the weight value 1000 to the register 0X00B9) Third point of weight calibration

Send: 01 06 00 BA 07 D0 AB 83 (write the weight value 2000 to the register 0X00BA) Fourth point of weight calibration

Send: 01 06 00 BB 0B B8 FE AD (Write the weight value 3000 to the register 0X00BB) Fifth point of weight calibration

6.8 Digital calibration (weightless calibration)

Affected by the sampling accuracy, sensor sensitivity error, etc., there is a certain error in the digital calibration, this calibration method can only be used without standard weight (force source), the following is a sensor range of 5000, sensitivity 2.0mv/v as an example

Send: 01 06 00 B6 00 FF 28 6C (Write FF 0x00B6 change the calibration method of the first pass to digital calibration).

Send: 01 06 01 3A 13 88 A5 6D (write 5000 to 0x013A set the sensor to 5000 at full scale, 13 88 for hexadecimal, convert to decimal to 5000).

Send: 01 06 01 3B 07 D0 FA 57 (write 2000 0x013B set sensor sensitivity to 2.000, 07 D0 to 16, convert to decimal to 2000).

If the sensor sensitivity is 1.542, write 1542 to the register 0x0024, and do not support sensitivity 4 decimal place writes, such as the sensor sensitivity is 1.5422, round to 1.542)

Send: 01 06 01 3D 27 10 03 C6 (write 10000 to 0x0026 this step is to modify the range coefficient of 1, if it has not been modified before, this step can be ignored).

At this point, the digital calibration is completed, and the above mentioned that there is a certain error in the digital calibration, for example, the actual weight (force value) is 2000, and the module displays the output value of 2008, in order to further reduce the error, we can modify the range coefficient, the calculation method is the actual value/module display value, that is, 2000/ 2008≈ 0.9960, then we write 0.9960 to the register 0X013D, note that the range correction factor must be 1 before this operation, so before calculating the range correction coefficient, we must perform 01 06 01 3D 27 10 03 C6 , and modify the range factor to 1.

The method of modifying the range factor is as follows:

Send: 01 06 01 3D 26 E8 03 D4 (write 9960 to modify the range correction factor 0x013D to 0.9960, convert 9960 to hexadecimal to 26 E8).

Other channel modification methods are the same as the first channel, pay attention to the register address and verification, and you can also purchase our company's debugging software operation.

7. Special instructions

7.1 Dynamic tracking/dynamic tracking refresh frequency

1. If the dynamic tracking register is set to 0, the dynamic tracking refresh frequency register is invalid.

2. If the dynamic tracking register is not set to 0 and the dynamic tracking refresh frequency register is 0, as long as the output data is within the dynamic tracking range, the data output is always the first value.

Example: The dynamic trace register is set to 5

Sampled data sequences: 0, 20, 23, 21, 23, 23, 21, 23, 21, 12, 5, 0

Display data sequence: 0,20,20,20,20,20,20,20,20,20,20,12,5,0

After 20 appears in the sample, the fluctuation does not exceed 5, so the stable output is 20, when 12 appears, the fluctuation is greater than 5, and it is refreshed

3. If the dynamic tracking register is not set to 0 and the dynamic tracking refresh frequency register is x (x is not 0), the data in the dynamic range will be refreshed if x appears continuously.

For example, the dynamic tracking register is set to 5, and the dynamic tracking value refresh register is set to 3

Sampled data sequences: 0, 20, 23, 21, 23, 23, 21, 23, 21, 12, 5, 0

Display data sequences: 0,20,20,20,20,20,20,23,23,23,12,5,0

In the above sequence, because 0-20 exceeds the dynamic tracking 5, 20 is displayed stably, and then sequence 23 appears 3 times in a row (within the range of 20±5) and is refreshed to a new stable value

If the sequence exceeds the range of 20±5, it is refreshed again to a new stable value.

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