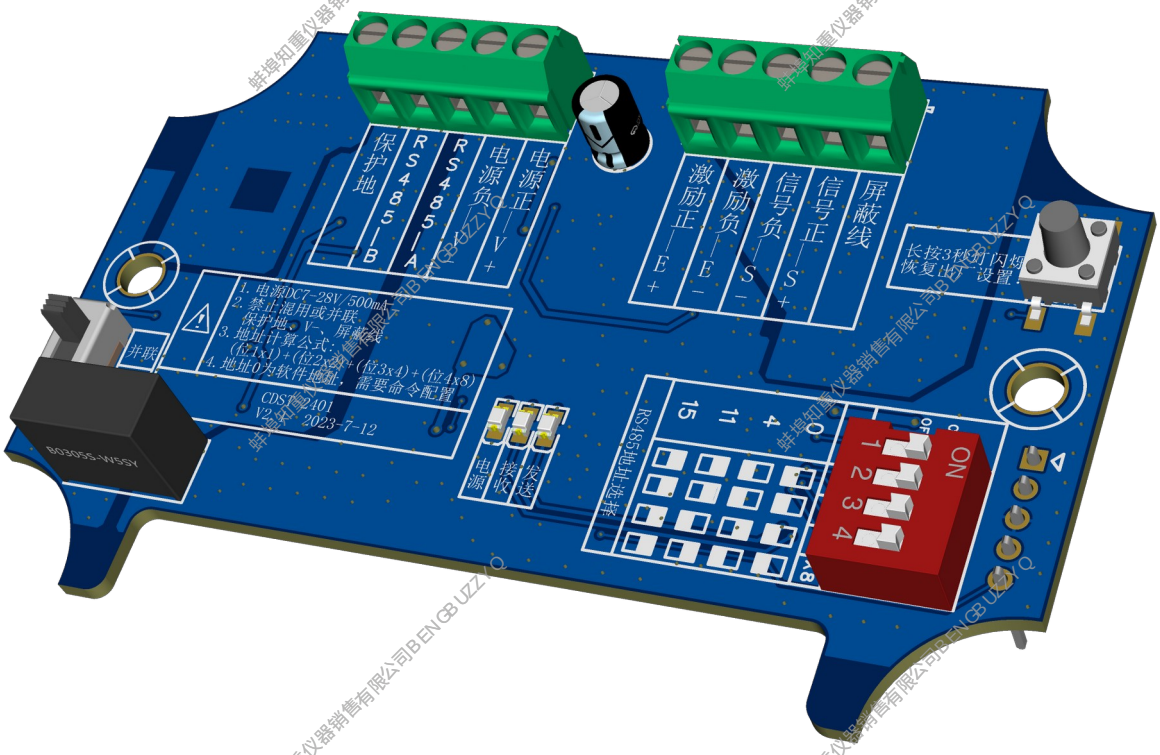
485 Digital Weighing Module

User Manual

10-Point Correction Calibration Digital Calibration Sampling Frequency 1280Hz



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1. Statement

We make every effort to improve the robustness and long-term stability of the product. However, due to unexpected reasons (such as surge voltage, wiring disconnection, or strong vibration), there is still a risk of failure during actual application, which may cause the product to operate abnormally or stop working. Users should analyze the application system and prepare exception-handling measures for possible failures, so as to avoid threats to equipment safety and personal safety. Fault-handling considerations (mechanical or electrical) should be incorporated from the design stage of industrial equipment, rather than only after economic loss or personal injury occurs. The company does not assume responsibility for economic loss or personal injury caused by product failure.

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2. Overview

This transmitter is a digital weighing transmitter. It can be directly connected to Wheatstone bridge-type tension/compression sensors. Through the internal signal amplification circuit and AD acquisition circuit, the weak analog voltage signal from the sensor is converted into a digital signal. The built-in microprocessor supports calibration algorithms. After calibration, the real-time weight value can be read

directly from the 485 interface; the module output supports the Modbus-RTU protocol.

This product is suitable for: weighing, batching, force measurement, and other industrial scenarios. The standard Modbus-RTU communication protocol makes it easy to connect the module with PLC, DCS, and computers, serving as a front-end signal processing module for weighing.

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3. Technical Specifications

3.1 General Technical Specifications

Power Supply: DC 7–28VDC

Power Consumption: <1W

Operating Current: Varies depending on number of connected sensors and supply voltage; drive capability 500mA

Operating Environment: Temperature −40~85°C; Humidity 0%–95% RH, non-condensing

Isolation & Protection: Opto-isolation, power isolation, surge protection (not included in basic version)

Protection Level: IP65

Mounting Method: Mounting holes

Weight: ≈250g

3.2 Sensor Interface Performance

Supported Sensor Types: All Wheatstone bridge strain-type sensors

Sensor Excitation Voltage: 5VDC ±3%

Sensor Drive Capability: Up to 8 × 350Ω sensors

Input Signal Range: 0 – ±30mV

Temperature Coefficient: ≤0.01% of reading + 0.3 d/°C

Non-linearity Error: ≤0.003% F.S.

Stable Resolution: 1/500000

Sampling Rates: 10Hz, 40Hz, 640Hz, 1280Hz

Sampling Method: Sigma-Delta AD

3.3 Communication Interface

Communication Method: RS485

Protocol: Standard Modbus RTU protocol; supports function codes 03, 06, 16 (0x10)

Baud Rates: 2400, 4800, 9600, 19200, 28800, 38400, 57600, 115200, 256000, 500000

Slave Software Address: 1–255; Broadcast address 254

Slave DIP Address: 0–1

3.4 Factory Default Parameters

Baud Rate: 9600

Data Bits: 8

Stop Bits: 1

Parity: None

Module Address: 1

CRC Byte Order: Little-endian

Data Byte Order: 2143

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4. Register Description

All registers are located in the Modbus holding register area (non-volatile). Each register is 16-bit. Some functions are represented as 32-bit values (e.g., real-time weight). Two adjacent registers form a 32-bit signed number; the lower-address register is the low word. If the high/low word order is not configured correctly, the data will be incorrect. Always read/write 32-bit registers as signed 32-bit. Reading only the low word may seem correct but will cause errors for negative or large numbers.

Register allocation of the module is as follows:

Dec	Hex	PLC	Data Type	R/W	Write Protect	Function	Description
0	0x0000	40001	32-bit signed Low word	R	—	Real-time weight	High word first, low word after; signed 32-bit;

Dec	Hex	PLC	Data Type	Word or R/W	Write Protect	Function	Description
							MSB=0 positive, MSB=1 negative
1	0x0001	40002	—	High	—	—	—
2	0x0002	40003	32-bit unsigned	Low	R	—	Internal code value	AD code value corresponding to current weight
3	0x0003	40004	—	High	—	—	—
4	0x0004	40005	32-bit unsigned	Low	R	—	Current zero point	AD code value when output

Dec	Hex	PLC	Data Type	Word or R/W	Write Protect	Function	Description
							weight=0; write 1 to 0x0016 for zero calibration
5	0x0005	40006	—	High —	—	—	—
6	0x0006	40007	16-bit unsigned	Yes W	Calibration weight	20–65535; actual 100.00 → write 10000; write value here for single-point calibration	
7	0x0007	40008	—	—	Reserved	—	—
8	0x0008	40009	—	—	Reserved	—	—

Dec	Hex	PLC	Data Type	R/W or Wd	Write Protect	Function	Description
							1–20; default 5. Lower=slower but more accurate; higher=faster but may overshoot
9	0x0009	40010	16-bit unsigned	R/W	Yes	Zero-tracking strength	1–50; default 3.
10	0x000A	40011	16-bit unsigned	R/W	Yes	Dynamic zero-tracking	Auto zero when weight within range and stable
11	0x000B	40012	16-bit unsigned	R/W	Yes	Zero-tracking enable	0=disable both; 1=power-on only; 2=dynamic only; 3=both (default)
12	0x000C	40013	16-bit unsigned	R/W	Yes	Division value	1,2,5,10,20,50,100; default 1. Limits minimum output step.
13	0x000D	40014	16-bit	R/W	Y	Median	1,3,5,7,9; default 3.

Dec	Hex	PLC	Data Type	R/W or Wd	Write Protect	Function	Description
			unsigned	R/W	Yes	filter	Higher=more stable, but slower.
14	0x000E	40015	16-bit unsigned	R/W	Yes	Sampling rate	10,40,640,1280Hz; default 40Hz. ≥40Hz requires baud ≥115200
15	0x000F	40016	16-bit unsigned	R/W	Yes	Module address	1–255; default 1. Write value to change software address (DIP must be 0). 254=broadcast
16	0x0010	40017	16-bit unsigned	R/W	Yes	Baud rate	1–10; default 3. 1=2400,2=4800,...,10=500000. Takes effect immediately, reconnect

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Dec	Hex	PLC	Data Type	R/W or Wd	Write Protect	Function	Description
							required.
17	0x0011	40018	16-bit unsigned	R/W	Yes	Averaging filter	1–50; default 10. Averages several cycles for stable output. 0–50; default 1.
18	0x0012	40019	16-bit unsigned	R/W	Yes	Dynamic tracking range	Stabilizes output under vibration; e.g., ±5 range holds 100 until exceeded. 0–10; default 5.
19	0x0013	40020	16-bit unsigned	R/W	Yes	Creep tracking range	Corrects drift under long-term loading.
20	0x0014	40021	16-bit unsigned	R/W	Yes	Stable weight switch	0=off; 1=on (default 0). Directly outputs

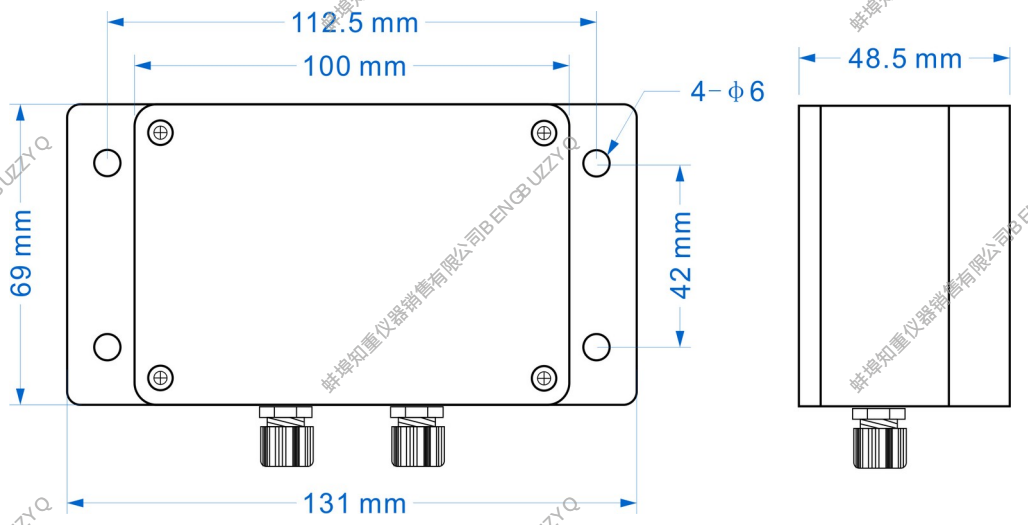
Dec	Hex	PLC	Data Type	R/W	Write Protect	Function	Description
						final value without intermediate transition.	
21	0x0015	40022	16-bit unsigned	R/W	No	Tare	1=tare; 2=cancel tare
22	0x0016	40023	16-bit unsigned	R/W	Yes	Command register	1=Zero calibration; 9=Factory reset
23	0x0017	40024	16-bit unsigned	R/W	No	Write protect	0=open; 1=close
24	0x0018	40025	16-bit unsigned	R/W	Yes	Calibration mode	0=Weight calibration; FF=Digital calibration; 1–10=Enable 1–10

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Dec	Hex	PLC	Data Type	R/W or Write Protected	Function	Description
						point correction
25–34	0x0019–0x0022	40026–40035	16-bit unsigned	Yes	Calibration weight points 1–10	Enter weight values (20–65535, no decimal). Supports up to 10 points.
35	0x0023	40036	16-bit unsigned	Yes	Sensor full capacity	Valid in digital calibration; 20–65535
36	0x0024	40037	16-bit unsigned	Yes	Sensor sensitivity	Valid in digital calibration; e.g., 2000=2.0mV/V
37	0x0025	40038	16-bit unsigned	Yes	Voltage correction ratio	Default 1 (1000=1.000); normally unchanged
38	0x0026	40039	16-bit unsigned	Yes	Capacity correctio	Default 1 (10000=1.0000).

Dec	Hex	PLC	Data Type	R/W or Wd	Write Protect	Function	Description
					n		
ned			coefficient			Adjust linearity if needed.	

5. Installation



5.1 Installation and Dimensions

(See original diagram: 131 × 112.5 × 48.5 mm, mounting holes, etc.)

5.2 Installation Environment

Precision electronic instrument; handle carefully during installation and operation.

Avoid direct sunlight or sudden temperature changes.

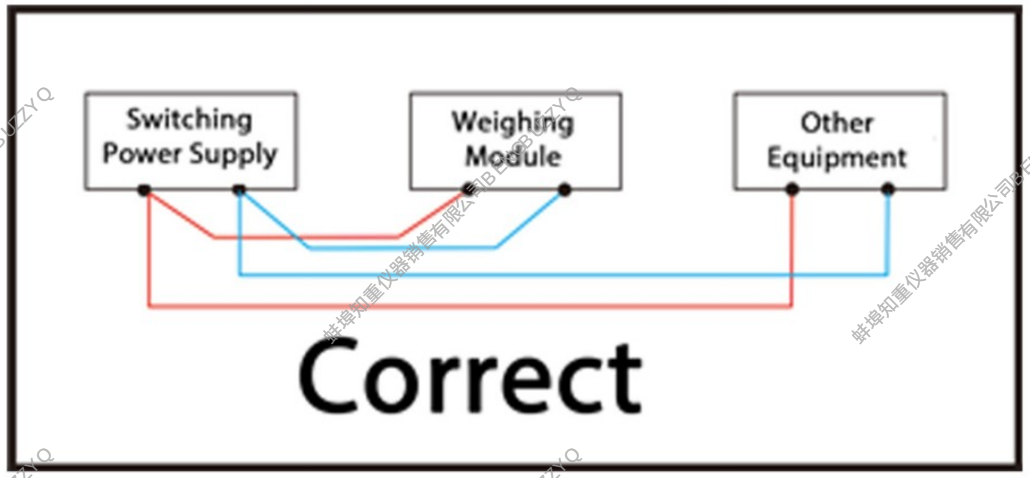
Ensure ventilation and space for heat dissipation.

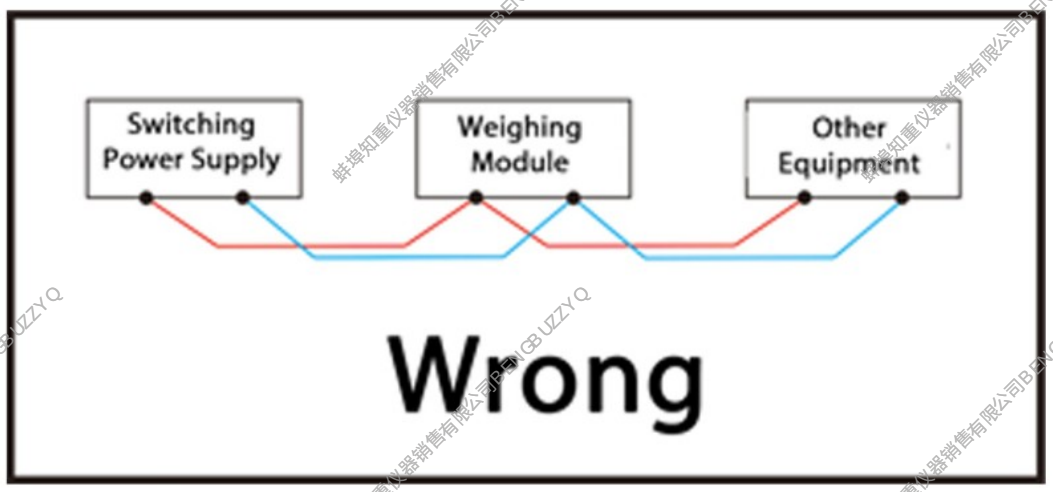
Splash-proof only; not for immersion.

Avoid strong vibration/impact.

Do not install in explosive environments.

5.3 Power Supply





7–28VDC, stable, no transients/noise.

Condensation may form; keep powered or inspect regularly.

Use properly rated cables.

For multi-device power supply, follow wiring diagram.

5.4 Wiring Definition

Ensure power off before wiring.

Sensor wire color codes vary; confirm with manufacturer.

Sensor excitation and signal must connect only to this module; do not share or use external excitation.

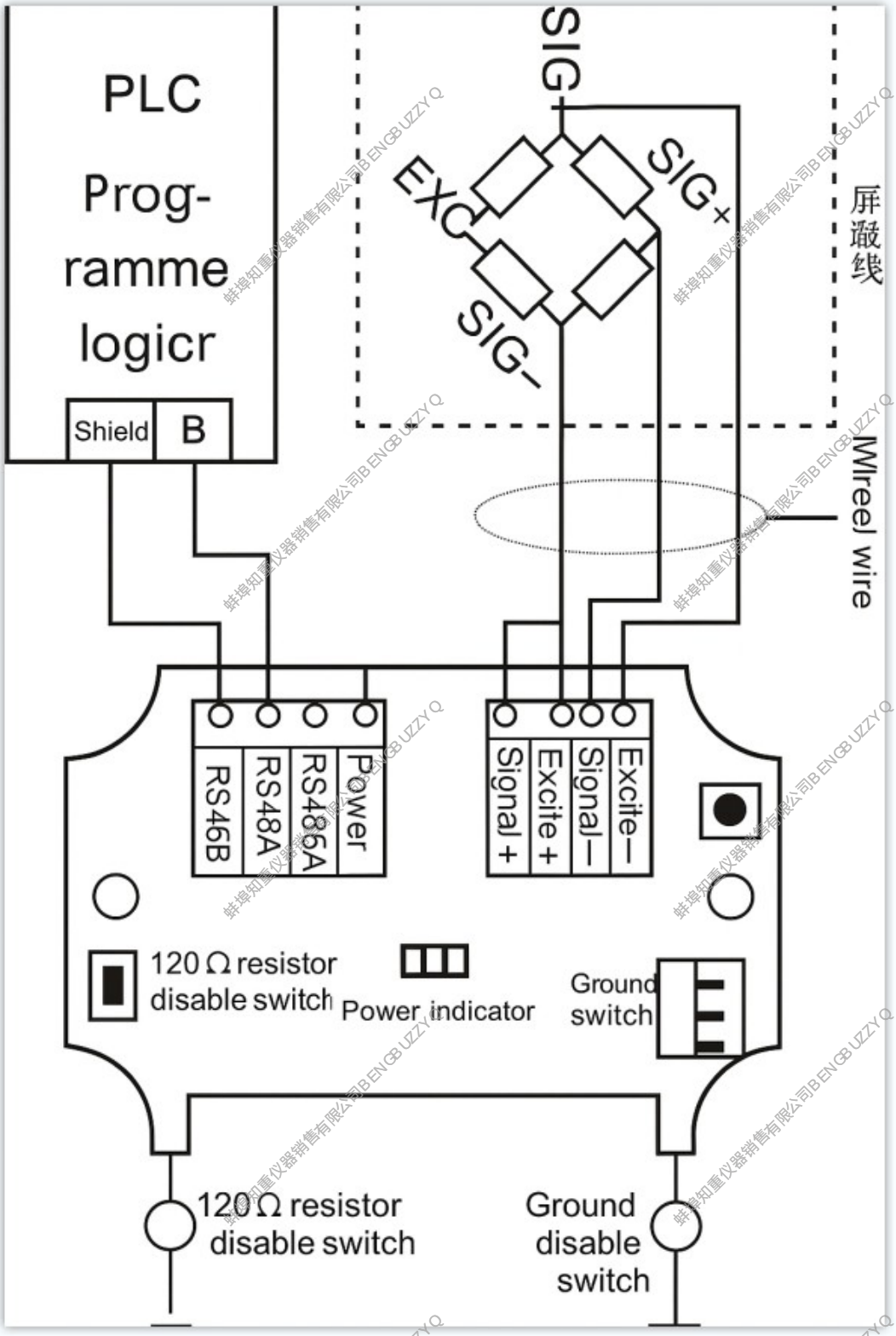
Arrange sensor wiring before calibration; do not bend wires afterward.

Tighten all wires.

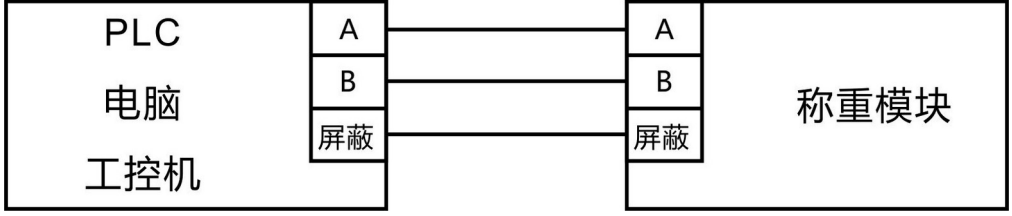
Excitation voltage is only for sensors.

(See 4-wire and 6-wire wiring diagrams.)

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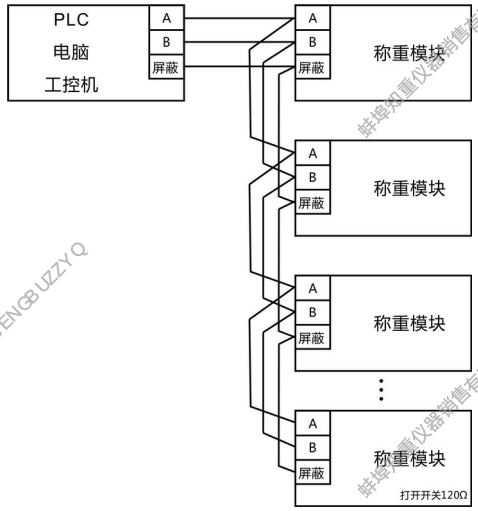


5.5 RS485 Interface



RS485 communication; max distance 1200m at 9600 baud.

Up to 32 devices on one bus.



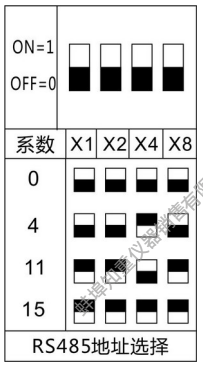
Short distance: direct wiring.

Long distance: twisted pair, shielded cable.

One-to-many: enable 120Ω termination at last device.

5.6 Station Address

Modbus RTU master-slave. Module responds only if address matches.



Supports DIP 0–15 and software 1–255.

Broadcast address = 254 (single-device only).

DIP: Up=1, Down=0. Weighted sum (×1,×2,×4,×8).

Examples: 0001=1; 0000=0; 0100=4; 1011=11; 1111=15.

5.7 Indicators and Reset

3 green LEDs: Power, Communication, Acquisition.

Power on → Power LED on, others off.

Comm LED toggles when valid Modbus command received and address matches.

Reset button: hold >3s until all LEDs flash → factory reset.

Caution: clears all parameters including calibration.

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6. Communication Examples

(Using internal addresses; PLC: internal 0 = PLC 40001)

6.1 Read Current Weight

Send: `01 03 00 00 00 02 C4 0B`

Receive: `01 03 04 04 D2 00 00 5B 3A`

6.2 Zero Calibration

Send: `01 06 00 17 00 01 F8 0E` (disable write protect)

Send: `01 06 00 16 00 01 A9 CE` (write 1 to 0x0016)

6.3 Weight Calibration

Send: `01 06 00 18 00 00 09 CD` (set 0x0018=0 enable weight

calibration)

Send: `01 06 00 06 01 F4 69 DC` (write 500 to 0x0006)

6.4 Multi-Point Calibration (example 5 points: 100,500,1000,2000,3000)

Send: `01 06 00 18 00 05 C9 CE` (enable 5-point)

Then write each weight to registers 0x0019–0x001D.

6.5 Digital Calibration (no weights)

Example: capacity 5000, sensitivity 2.0mV/V.

Send: `01 06 00 18 00 FF 49 8D` (digital mode)

Send: `01 06 00 23 13 88 75 56` (full capacity=5000)

Send: `01 06 00 24 07 D0 CA 6D` (sensitivity=2000)

Send: `01 06 00 26 27 10 72 3D` (set coefficient=1)

If actual=2000 but module=2008, correction factor=2000/2008≈0.9960.

Send: `01 06 00 26 26 E8 72 2F` (write 9960=0.9960).

6.6 Modify Sampling Rate (1280Hz)

Send: `01 06 00 0E 05 00 EB 59`

6.7 Modify Address (to 2)

Send: `01 06 00 0F 00 02 38 08`

6.8 Modify Baud Rate (to 115200)

Send: `01 06 00 10 00 08 89 C9`

6.9 Tare and Cancel Tare

Send: `01 06 00 15 00 01 59 CE` (tare)

Send: `01 06 00 15 00 02 19 CF` (cancel tare)

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