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Wireless Load Cell Transmitter and Receiver User Manual



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Preface

Thank you for choosing our product!

This manual contains information on product specifications, package contents, appearance, operating instructions, communication instructions, functions, parameter tables, FAQs, and warranty information. To ensure optimal performance and long-term reliable operation, please read this manual carefully before use and keep it for future reference.

No part of this manual may be reproduced without permission.
Safety Precautions

CAUTION

- Improper operation may result in personal injury or property damage.
- Do not use this product in nuclear facilities or medical equipment related to life support.
- All input and output signal cables must be equipped with appropriate surge suppression circuits to prevent damage caused by electrical surges.
- Do not allow metal objects or conductive fragments to enter the product, as this may cause electric shock, fire, or malfunction.
- Ensure that the terminal screws are securely tightened. Loose connections may cause electric shock or fire.
- Always turn off the power supply before cleaning.
- When cleaning, use a dry, soft cloth to remove dirt from the product. Do not use liquid cleaning agents, as they may cause deformation or discoloration.
- Do not strike or hit the display with hard objects.
- Installation, commissioning, and maintenance of this product must be performed by qualified engineering and technical personnel.
- Wireless products should not be installed inside metal enclosures. Install them in open areas whenever possible to improve signal strength.
- Keep the antennas of wireless products away from other objects to prevent signal attenuation caused by grounding effects.

WARNING

- Improper operation may result in personal injury or property damage.
- Operating the product beyond the specified environmental conditions may affect measurement accuracy and service life. In severe cases, permanent damage to the instrument may occur.
- Installation, commissioning, and maintenance of this product must be performed by qualified engineering and technical personnel.
- Our company shall not be liable for any direct or indirect losses arising from the removal or modification of this product.
- Our company reserves the right to modify this product manual without prior notice.

1. Performance Specifications and Features

The receiver receives data from wireless transmitters and processes the data through operations such as calibration before transmitting it to a PC or PLC via RS485 communication. Hereinafter referred to as the "receiver."

1.1 Technical Specifications

Item	Specifications
Temperature	Temperature drift: Less than 20 ppm
Operating Temperature	-20°C to 50°C
Communication	RS485 communication, Modbus-RTU protocol
Power Supply	5V or 24V DC (select one)
Analog Output	Maximum 10 mV voltage output, compatible with external instruments
Housing	Protective rating: IP65
Communication Range	Maximum line-of-sight wireless communication range: 800 m (in clear, open environments)

1.2System Features



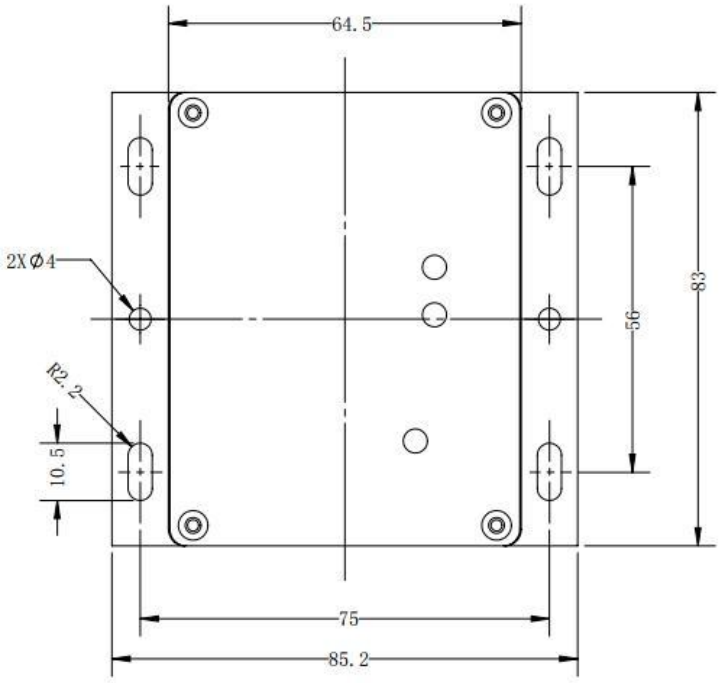
2. Package Contents and Appearance

2.1. Packing List

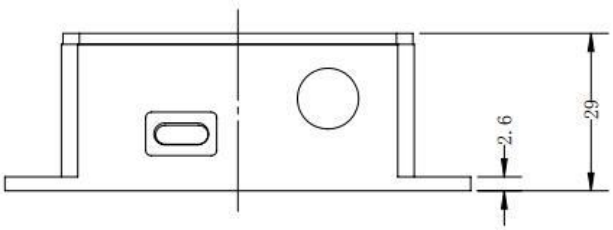
1. Wireless Receiver × 1
2. USB Type-C Data Cable × 1
3. User Manual × 1

2.2. Product Dimensions

Front View Dimensions



Top View Dimensions



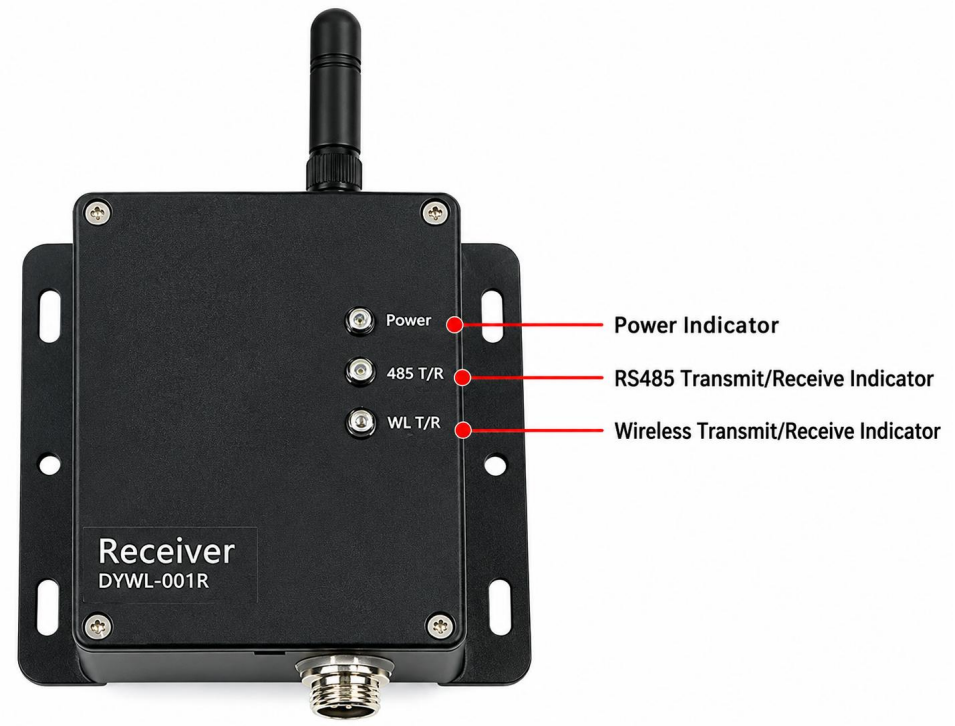
2.3. Wiring Definitions

Before wiring, please confirm the device version: (EX+ and EX− support 5V power supply only. Verify the supply voltage before use to avoid damaging the instrument.)

Version	Signal Name	Aviation Connector Pin No.	Wire Color	Remarks
DYWL-001R-A	EX+ (5V)	1	Red	5V-powered version. Supports mV signal output but does not support RS485 communication.
	EX−	2	Black	
	SIG+	3	Green	
	SIG−	4	White	
DYWL-001R-B	24V+	1	Red	24V-powered version. Supports RS485 communication but does not support mV signal output.
	24V−	2	Black	
	RS485-A	3	Green	
	RS485-B	4	White	

3. Function Description

3.1. LED Indicator Description



3.2. Communication Method and Range

The system requires the transmitter and receiver to have matching address codes to ensure proper operation. To prevent signal interference and enhance the system's anti-interference capability, the system supports communication over multiple channels.

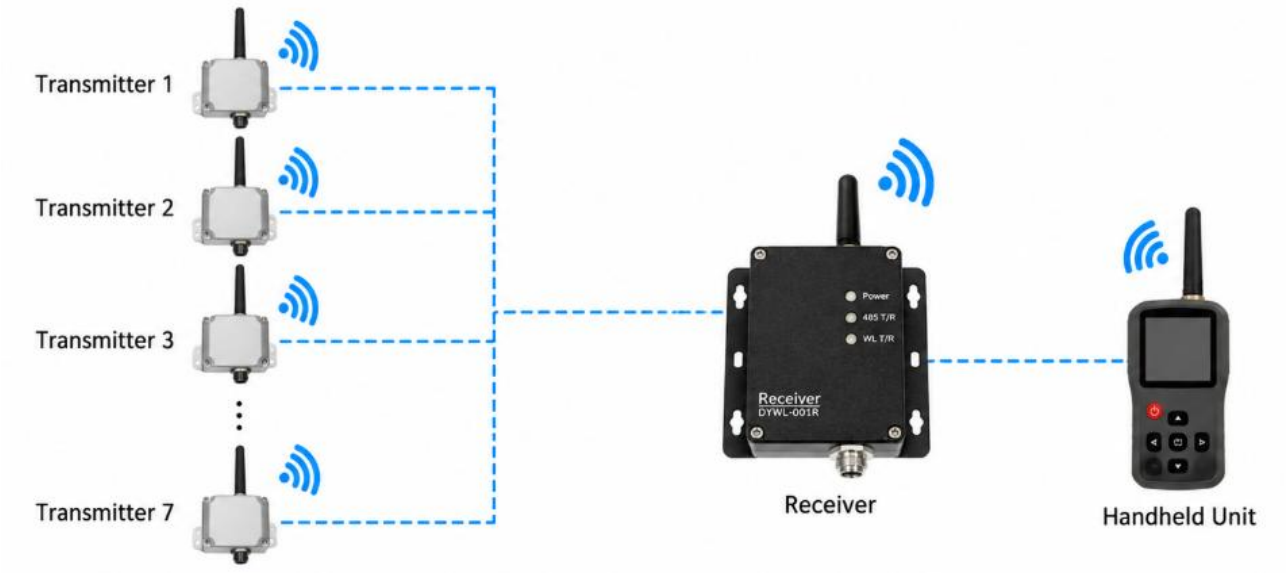
The maximum wireless communication range is 800 m in open, unobstructed environments (clear weather). Obstacles such as metal walls may significantly reduce communication performance. Therefore, it is recommended to conduct testing in an open area whenever possible to improve signal strength.

3.3. Communication Pairing

To establish communication between the wireless transmitter and receiver, the wireless channel and wireless device ID must be matched.

The wireless channel refers to the frequency channel used for wireless data transmission. Transmitters and receivers operating on the same channel can communicate wirelessly. The wireless device ID is used to distinguish different transmitters and receivers operating on the same wireless channel.

A single DYWL-001R-A/B wireless receiver can connect to up to 7 transmitters simultaneously. All 7 transmitters and the handheld device share the same wireless frequency channel.



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3.4. Pairing Instructions

The DYWL-001R is a wireless data receiver operating at a frequency range of 433 – 915 MHz. The transmitter can be used with our company's other wireless devices of the same type. For specific compatibility details, please consult the relevant technical personnel. Two parameters require attention during operation: wireless channel and wireless address code.

The wireless channel determines the operating frequency of the wireless device and is a prerequisite for establishing wireless communication. The default wireless channel is 433 MHz. Changing this parameter will also change the receiver's operating frequency. The transmitter channel must be adjusted accordingly to ensure proper communication.

The wireless address code functions as a device identifier. Each of the seven channels has its own wireless address code parameter, which is used to distinguish different devices operating on the same wireless channel and process their data accordingly.

When multiple devices are operating simultaneously, it is recommended to reduce the transmission frequency of the transmitters to minimize signal collisions. Alternatively, different wireless channels can be selected for communication.

3.5. Millivolt (mV) Output

When using the millivolt output function, the receiver can only receive single-channel wireless data, operating in a one-to-one configuration. The output corresponds to the device signal assigned to Channel 1.

The DYWL-001R can replace a conventional four-wire sensor. The red and black wires are used for power supply, requiring 5V DC. A lower supply voltage may cause unstable power delivery and abnormal system operation.

The green wire is the millivolt output signal wire, with an output range of ±10 mV. Therefore, the sensor signal at the transmitter end must not exceed 2 mV/V; otherwise, the receiver may be unable to output the wireless signal properly.

The receiver obtains millivolt data from the transmitter's measurement values. Due to differences in the zero-point offset of individual devices, slight variations may occur in the receiver's mV output. However, the linear relationship remains unchanged and does not affect normal system operation. The zero offset can be adjusted through software.

3.6. Communication Instructions

The device's default communication parameters are as follows:
- Device Address: 01
- Baud Rate: 19200 bps
- Data Format: 8N1 (8 data bits, no parity, 1 stop bit)

These parameters are configured within 2.5 seconds after power-on. If the communication parameters are forgotten, the factory reset command can be sent immediately after power-on to restore the default settings.

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4. Communication Instructions

The instrument is equipped with an RS485 interface and supports the Modbus-RTU protocol (slave mode).

The factory default settings are: 19200 baud rate, device address 01, no parity, 8 data bits, and 1 stop bit.

Any modifications to communication-related parameters will take effect after the device is powered off and restarted.

4.1. Modbus-RTU Protocol

The Modbus-RTU protocol supports function code 0x03 (Read Holding Registers) and 0x10 (Write Multiple Registers). Data is represented as 32-bit signed integers (INT).

For detailed information about Modbus-RTU, refer to the official Modbus protocol specification.

To use this function, set the serial communication protocol parameter to 1. The protocol uses CRC16 error checking.

4.1.1. Read Command

The instrument uses function code 0x03 to read data. Since most parameters exceed 16 bits, a minimum of 32 bits (4 bytes) must be read. The number of bytes read each time must be an even number.

Example 1: 0x03 – Read Measurement Value

Master Request

01	03	07 F8	00 02	C4 86
Device Address	Read Command	Starting Address	Number of Registers to Read	CRC Check

Instrument Response

01	03	04	00 00 03 E8	FA 8D
Device Address	Read Command	Byte Count	Measurement Value (1000)	CRC Check

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4.1.2. Write Command

Example 1: 0x10 – Clear Communication Data

Master Request

01	10	0B B8	00 02	04	00 00 00 0A	0A 4A
Device Address	Write Command	Communication Address	Number of Registers	Byte Count	Hexadecimal Value (10)	CRC Check

Instrument Response

01	10	0B B8	00 02	C3 C9
Device Address	Write Command	Address	Number of Registers	CRC Check

Example 2: 0x10 – Communication Calibration

1. Send a Zero-Clearing Command When the Instrument Is Unloaded

Master Request

01	10	0B B8	00 02	04	00 00 00 0A	0A 4A
Device Address	Write Command	Communication Address	Number of Registers	Byte Count	Write 10 to Clear Zero	CRC Check

Instrument Response

01	10	0B B8	00 02	C3 C9
Device Address	Write Command	Address	Number of Registers Modified	CRC Check

2. Place a Known Weight on the Sensor. Once the Reading Stabilizes, Write the Weight Value 10000 (0x2710) to Address 3000 (0xBB8).

Master Request

01	10	0B B8	00 02	04	00 00 27 10	90 71
Device Address	Write Command	Communication Address	Number of Registers	Byte Count	Calibration Weight	CRC Check

Instrument Response

01	10	0B B8	00 02	C3 C9
Device Address	Write Command	Communication Address	Number of Registers Modified	CRC Check

3. Send the Calibration Command to Complete Calibration

Master Request

01	10	0B B8	00 02	04	00 00 00 0B	C8 8A
Device Address	Write Command	Communication Address	Number of Registers	Byte Count	Write 20 to Calibrate	CRC Check

Instrument Response

01	10	0B B8	00 02	C3 C9
Device Address	Write Command	Address	Number of Registers Modified	CRC Check

Note: The original image contains an inconsistency: the command data `00 00 00 0B` represents decimal 11, while the Chinese description states “Write 20 to Calibrate.” The table above preserves the original command bytes and translates the description as written. Verify the command value before use.

Partial Parameter Address Table

Parameter Name	Operation	Parameter Address / Command	Function
Restore Factory Settings	Write Only	Write 50 to Address 3000	Restore all parameters to factory default values (use with caution).
Zero Channel 1	Write Only	Write 1 to Address 3000	Zero the real-time reading of Channel 1.
Zero Channel 2	Write Only	Write 2 to Address 3000	Zero the real-time reading of Channel 2.
Zero Channel 3	Write Only	Write 3 to Address 3000	Zero the real-time reading of Channel 3.
Zero Channel 4	Write Only	Write 4 to Address 3000	Zero the real-time reading of Channel 4.
Zero Channel 5	Write Only	Write 5 to Address 3000	Zero the real-time reading of Channel 5.
Zero Channel 6	Write Only	Write 6 to Address 3000	Zero the real-time reading of Channel 6.
Zero Channel 7	Write Only	Write 7 to Address 3000	Zero the real-time reading of Channel 7.
Calibration Value Input	Write Only	Write the calibration force value to Address 3002	Enter the calibration force value during force calibration.

Calibrate Channel 1	Write Only	Write 11 to Address 3000	Set the current reading as the calibration value for Channel 1.
Calibrate Channel 2	Write Only	Write 12 to Address 3000	Set the current reading as the calibration value for Channel 2.
Calibrate Channel 3	Write Only	Write 13 to Address 3000	Set the current reading as the calibration value for Channel 3.
Calibrate Channel 4	Write Only	Write 14 to Address 3000	Set the current reading as the calibration value for Channel 4.
Calibrate Channel 5	Write Only	Write 15 to Address 3000	Set the current reading as the calibration value for Channel 5.
Calibrate Channel 6	Write Only	Write 16 to Address 3000	Set the current reading as the calibration value for Channel 6.
Calibrate Channel 7	Write Only	Write 17 to Address 3000	Set the current reading as the calibration value for Channel 7.
Digital Calibration – Channel 1	Write Only	Write 21 to Address 3000	Verify the measurement range and sensitivity. Refer to the parameter table.
Digital Calibration – Channel 2	Write Only	Write 22 to Address 3000	Same as above.
Digital Calibration – Channel 3	Write Only	Write 23 to Address 3000	Same as above.
Digital Calibration – Channel 4	Write Only	Write 24 to Address 3000	Same as above.
Digital Calibration – Channel 5	Write Only	Write 25 to Address 3000	Same as above.
Digital Calibration – Channel 6	Write Only	Write 26 to Address 3000	Same as above.
Digital Calibration – Channel 7	Write Only	Write 27 to Address 3000	Same as above.
Multi-Channel Mode Force Value 1	Read Only	2040	Calibrated force value for the corresponding channel in multi-channel mode.
Multi-Channel Mode Force Value 2	Read Only	2042	Same as above.
Multi-Channel Mode Force Value 3	Read Only	2044	Same as above.
Multi-Channel Mode Force Value 4	Read Only	2046	Same as above.
Multi-Channel Mode Force Value 5	Read Only	2048	Same as above.
Multi-Channel Mode Force Value 6	Read Only	2050	Same as above.
Multi-Channel	Read Only	2052	Same as above.

Mode Force Value 7			
Channel 1 Wireless Status	Read Only	2060	Updated once per second. Indicates the number of data packets received per second by the channel.
Channel 2 Wireless Status	Read Only	2062	Same as above.
Channel 3 Wireless Status	Read Only	2064	Same as above.
Channel 4 Wireless Status	Read Only	2066	Same as above.
Channel 5 Wireless Status	Read Only	2068	Same as above.
Channel 6 Wireless Status	Read Only	2070	Same as above.
Channel 7 Wireless Status	Read Only	2072	Same as above.
Channel 1 Battery Voltage	Read Only	2080	Battery level is displayed in five levels: Level 1: 4.11–3.88V; Level 2: 3.88–3.68V; Level 3: 3.68–3.61V; Level 4: 3.61–3.52V. Recharge promptly if the voltage drops below 3.6V.
Channel 2 Battery Voltage	Read Only	2082	Same as above.
Channel 3 Battery Voltage	Read Only	2084	Same as above.
Channel 4 Battery Voltage	Read Only	2086	Same as above.
Channel 5 Battery Voltage	Read Only	2088	Same as above.
Channel 6 Battery Voltage	Read Only	2090	Same as above.
Channel 7 Battery Voltage	Read Only	2092	Same as above.

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5. Parameter Table

5.1. System Parameters

The following parameters are readable and writable. All data is in 32-bit signed integer format.

Address	Parameter Name	Default Value	Range	Description
20	Baud Rate	3	0–6	0: 2400; 1: 4800; 2: 9600; 3: 19200; 4: 38400; 5: 57600; 6: 115200. Takes effect after restart.
22	Data Format	0	0–1	0: 8N1; 1: 8N2 (No parity, 8 data bits, 1 or 2 stop bits).
24	Communication Low Bit	0	0–1	0: High bit first; 1: Low bit first.
28	Communication Address	1	0–255	Modbus-RTU communication address.
40	Wireless Address Code	1	1–255	Factory-configured. No modification is required for paired devices. Consult the manufacturer before making changes.
100	Channel 1 Wireless Device ID	1	1–255	Factory-configured. No modification is required for paired devices. Consult the manufacturer before making changes.
102	Channel 2 Wireless Device ID	2	1–255	Same as above.
104	Channel 3 Wireless Device ID	3	1–255	Same as above.
106	Channel 4 Wireless Device ID	4	1–255	Same as above.
108	Channel 5 Wireless Device ID	5	1–255	Same as above.
110	Channel 6 Wireless Device ID	6	1–255	Same as above.
112	Channel 7 Wireless Device ID	7	1–255	Same as above.
120	Channel 1 Range Coefficient	10000	-99999 to 99999	Channel 1 linear calibration coefficient. Automatically adjusted during calibration.
122	Channel 2 Range Coefficient	10000	-99999 to 99999	Channel 2 linear calibration coefficient. Automatically adjusted during calibration.
124	Channel 3 Range Coefficient	10000	-99999 to 99999	Channel 3 linear calibration coefficient. Automatically adjusted during calibration.

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126	Channel 4 Range Coefficient	10000	-99999 to 99999	Channel 4 linear calibration coefficient. Automatically adjusted during calibration.
128	Channel 5 Range Coefficient	10000	-99999 to 99999	Channel 5 linear calibration coefficient. Automatically adjusted during calibration.
130	Channel 6 Range Coefficient	10000	-99999 to 99999	Channel 6 linear calibration coefficient. Automatically adjusted during calibration.
132	Channel 7 Range Coefficient	10000	-99999 to 99999	Channel 7 linear calibration coefficient. Automatically adjusted during calibration.
160	Unit 1	3	0–7	0: None; 1: t; 2: kN; 3: kg; 4: lb; 5: N; 6: g; 7: N·m.
162	Unit 2	3	0–7	Same as above.
164	Unit 3	3	0–7	Same as above.
166	Unit 4	3	0–7	Same as above.
168	Unit 5	3	0–7	Same as above.
170	Unit 6	3	0–7	Same as above.
172	Unit 7	3	0–7	Same as above.
180	Decimal Places 1	1	0–5	Number of decimal places.
182	Decimal Places 2	1	0–5	Number of decimal places.
184	Decimal Places 3	1	0–5	Number of decimal places.
186	Decimal Places 4	1	0–5	Number of decimal places.
188	Decimal Places 5	1	0–5	Number of decimal places.
190	Decimal Places 6	1	0–5	Number of decimal places.
192	Decimal Places 7	1	0–5	Number of decimal places.
220	Measurement Range 1	10000	0–99999	Sensor measurement range, used for digital calibration.
222	Measurement Range 2	10000	0–99999	Sensor measurement range, used for digital calibration.
224	Measurement Range 3	10000	0–99999	Sensor measurement range, used for digital calibration.
226	Measurement Range 4	10000	0–99999	Sensor measurement range, used for digital calibration.
228	Measurement Range 5	10000	0–99999	Sensor measurement range, used for digital calibration.
230	Measurement Range 6	10000	0–99999	Sensor measurement range, used for digital calibration.
232	Measurement Range 7	10000	0–99999	Sensor measurement range, used for digital calibration.
240	Sensitivity 1	20000	0–99999	Sensor sensitivity, used for digital calibration.
242	Sensitivity 2	20000	0–99999	Sensor sensitivity, used for digital calibration.
244	Sensitivity 3	20000	0–99999	Sensor sensitivity, used for digital calibration.
246	Sensitivity 4	20000	0–99999	Sensor sensitivity, used for digital calibration.

248	Sensitivity 5	20000	0–99999	Sensor sensitivity, used for digital calibration.
250	Sensitivity 6	20000	0–99999	Sensor sensitivity, used for digital calibration.
252	Sensitivity 7	20000	0–99999	Sensor sensitivity, used for digital calibration.

6. Warranty Information

The product is covered by a one-year warranty from the date of sale.

If a product malfunction occurs during the warranty period, please contact our company promptly. Do not disassemble the product without authorization; otherwise, our company reserves the right to refuse warranty service.

Repair fees will be charged under any of the following circumstances:
1. The product is damaged after the warranty period has expired.
2. Damage caused by improper transportation, storage, or operation not in accordance with the user manual.
3. Damage caused by unauthorized disassembly or repair by personnel not authorized by our company.
4. Products without valid identification labels, products with serial numbers that do not match the original records, or products with altered serial numbers.
5. Damage caused by factors unrelated to product quality during the warranty period.