

Micro differential pressure transmitter

WE-T103 Instruction Manual



Hainan World Electronic Science and Technology Co.,Ltd.

U-WE-T103-CN1

Chapter 1 Preface

- This manual is an instruction manual for various functions, wiring methods, operation methods, etc. of the product.
- Please read this manual carefully before operation, use this product correctly, and avoid unnecessary losses caused by incorrect operation.
- After you finish reading, please keep it in a place where it is easy to access it at any time for easy reference.

Chapter 2 Note

- If there are any changes to the contents of this manual due to function upgrades, please refer to the newly released document.
- We strive to be correct in the content of this manual, so if you find an error, please contact us.
- The content of this manual is strictly prohibited from reprinting or copying.
- Please use this product in accordance with the characteristics of this product and comply with

national and regional laws and regulations.

- The final interpretation of this manual is the property of the Company.

Chapter 3 version

U-WE-T103-CN1 First Edition August 2025

Chapter 4 Confirm the package contents

After opening the box, check the contents of the package before you begin. If you find that the model and quantity are wrong, or if there is physical damage to the appearance, please contact us.

The product packaging content is shown in the standard configuration list.

Product standard configuration list

Serial number	Name	quantity	Note:
1	Micro differential pressure transmitter	1	
2	Instructions	1	

3	Antenna	1	
4	Certificate of conformity	1	

Note: Customized products may be slightly different from standard products, please refer to the order.

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Chapter 5

Chapter 6 Product Overview:

6.1 Product Introduction

WE-T103 is a series of micro-differential voltage monitoring transmitters, including LoRa, RS485, 4G, NB, etc., and the power supply mode is battery power supply and 24V power supply. The pressure transmitter adopts high-stability digital sensors to realize real-time monitoring and calculation of on-site pressure, and uses LoRa, RS485, 4G, NB and other communications to achieve long-distance communication.

The probe adopts on-board design, according to the different needs of the medium to be measured on site, the pressure range, and the installation method, providing a variety of pressure range products, optimally matching the needs of application scenarios, can be widely used in building buildings, industrial sites, municipal and other application scenarios.

6.2 Measurement principle

Diffusion silicon pressure sensors work on a principle based on the piezoresistive effect. According to the piezoresistive effect principle, the pressure of the measured medium acts directly on the

Chapter 1 Product Overview

diaphragm of the sensor, and the pressure is transmitted to the varistor through the diaphragm and the filling fluid, so that the resistance value of the sensor changes, and the electronic circuit detects this change and converts and outputs a standard measurement signal corresponding to this pressure.

6.3 Product features:

- The mobile app can monitor the meter anytime and anywhere.
- 4 communication methods to choose from.
- Battery and external power supply mode selection.
- Operating temperature range (-20~70)°C.
- Fully sealed waterproof design with IP67 protection.
- High-gain antenna and multiple verification mechanisms ensure always-on.
- Support high-definition LCD display, with LED indicators and buttons, you can check the differential voltage value, alarm information, battery prompt, etc. in real time on the spot;

Chapter 7 Technical parameters

Table 1 Technical parameters

Input	
Measure variables	Differential pressure
Measurement range	Pressure: $\pm 500\text{Pa}$
Performance parameters	
Accuracy	Pressure: $\pm 2\%$ FS
Minimum resolution	0.1Pa
Sampling period	1S-65535S can be set, default 30s
Reporting cycle	10s~65535s can be set, default 1 hour
Signal transmission	
LoRa	Antenna Interface Type: SMA Female It supports the 410.125~490.125MHz frequency band

Chapter 2 Technical Parameters

	Maximum transmit power of 22dBm, Maximum -147dbm reception sensitivity, 5KM signal coverage capability with open viewing distance
4G	Antenna Interface Type: SMA Female Three-year flow rate (100M/month) It supports MQTT, HTTP, and WES cloud service protocols LTE FDD B1/3/5/8 LTE TDD B34/38/39/40/41 (Full Band) Rate(Mbps) LTE FDD:10.3(DL)/5.1(UL) LTE TDD: 9.1(DL)/3.1(UL)
RS485	Communication protocol Compatible with WES-IO (fixed 9600bps) and Modbus protocol Baud rate 4800, 9600, 19200, 34800, 57600, 115200 Data bits 7 bits, 8 bits Stop positions 1 bit, 1.5 bit, 2 bit Check bits None, Odd, Even

Chapter 2 Technical Parameters

NB	Antenna Interface Type: SMA Female Five-year flow rate (300M/year) LTE Cat NB2: B3/B5/B8 Rate(kbps):Single-Tone:25.5(DL)/16.7(UL) Multi-Tpne: 127(DL)/158.5(UL)
Electrical specifications	
Power supply	19000mAh, lithium battery
	DC 9-30V
Battery life	Subject to specific usage conditions and reporting cycles. For example, the collection period is 60 seconds, and it is reported once an hour. LoRa: 4.5 years NB: 3.1 years 4G: 2.5 years
Process connection	
Media type	gas
Medium temperature	-20~85℃

Chapter 2 Technical Parameters

Overload pressure	150%F.S
environmental conditions	
Work environment	Temperature: (-20~70)°C Relative humidity: 5%~95%
Storage environment	Temperature: (-40~85)°C Relative humidity: 5%~95%
Protection level	Water and dust resistance: IP67 ESD: 4KV contact, 8KV non-contact

Chapter 8 Product structure and size

8.1 Dimensions

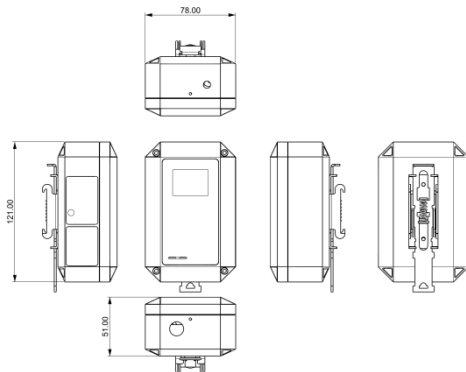


图1 Product dimensions

8.2 Connect the trachea

Tracheal length: 1.5m, other lengths need to be customized.

8.3 Material:

Housing material: ABS/PC

Pipe material: PVC

Chapter 9 Installation and wiring

9.1 Arrival inspection

After the product arrives, the user should first check the packaging quality of the product, the packaging box should be intact and the logo should be clear. If the packaging has been obviously damaged, contact the storage and transportation department in time to find out the problem and responsibility and notify our company. If the packaging is not damaged and other problems, the product can be taken out of the box and the integrity of the product can be counted.

9.2 Installation conditions:

- (1) A place that is easy to operate and maintain should be chosen for installation.
- (2) It should be installed as far away from vibration and heat sources as possible.

9.3 Installation notes

- (1) The measurement range is consistent with the range of the transmitter to be installed.
- (2) The thread specification of the fitting for process installation must be matched with the product.

Chapter 4 Installation and Wiring

(3) The measured medium must be compatible with the structural material of the transmitter.

(4) The measured medium must not block the inlet hole of the transmitter.

(5) The transmitter should be kept away from high voltage and serious electromagnetic interference, and try to stay away from high-power interference equipment to avoid inaccurate measurement, such as frequency converters, motors, etc.

Note: It is strictly forbidden to pierce the pressure hole with iron wire, steel needle and other hard objects, and it is not allowed to press the diaphragm with your hands to avoid damaging the diaphragm or causing diaphragm deformation.

9.4 Installation diagram

In the direction shown in the figure below, the accessories are installed on the back of the transmitter, and the two screws are fixed, and the transmitter can be directly snapped on the 35mm rail.

Chapter 5 Operation

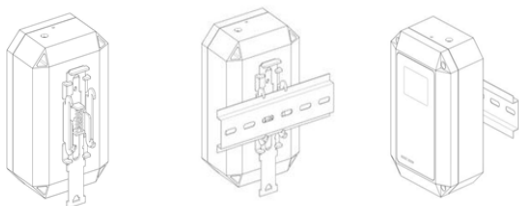


图2 Installation diagram

You can also install a fixed card, as shown below, push the spring upwards to snap the card in to facilitate the fixed installation with screws or cable ties.

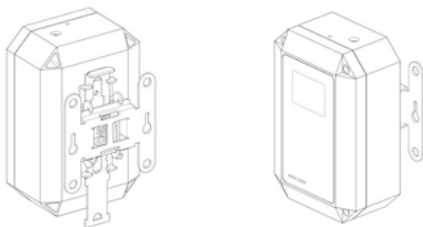


图11 Installation diagram

图12

图13

Chapter 10 operation

10.1 Display and operating unit



图14 Panel schematic

图15 5.1.1 Interface Description

Table 2 Interface description

Serial number	Description
1	System time
2	Bluetooth: After the Bluetooth connection between the phone and the device is successful, the Bluetooth logo will be displayed
3	Upside signal
4	Battery level
5	Units of measurement
6	Measurements
7	Recognition Countdown, after the device is recognized, start a 600-second countdown
8	Alarm information

图16

图17

图18

图19

图20

图21

图22

图23

图24

图25

图26 5.1.2 Key Instructions

1 operation button on the left side of the main unit.

Table 3 Key definitions

operation	Description
Click	Light up the screen and backlight Switch pages List wraps, option switching Modify the parameter value by 1
Double click	Enter the parameter modification sub-interface Determine the options
Three strikes	Identify the device Enter the parameter setting interface
Long press	Long press for 5~6 seconds, the system light will flash white, and the device will restart after releasing the button. Long press for 10-11 seconds, the system light flashes white, and after releasing the button, the device parameters return to the default value and enter the inactive state.

Chapter 5 Operation

operation	Description
Activation	Press and hold for 5~6 seconds, the system light flashes white, release the button, and then click the button to activate the device.

图27 5.1.3 Indicator Light Description

Communication indicator: flashing green, indicating normal communication

System Indicators:

Flashing green indicates that the device is normal

Flashing orange indicates that the device is alarmed

Flashing red indicates a faulty device

5.1.4 Alarm and fault information

Table 4 Alarm code

Status code	Problem location
1	Plate temperature
2	battery
3	Bluetooth
4	Uplink network
5	shown

Status code	Problem location
6	sensors
7	Other

For example, the status code in the figure shows 6, which indicates the sensor alarm, indicating that the current collected pressure difference value triggers the alarm threshold.

10.2 On-site operation

The key operation and screen display of the device are as follows: Click the button to light up the screen and display the monitoring value and other information; Click the button again to light up the background light, and click the button again to display the QR code. Under the QR code interface, click the button three times to enter the parameter setting interface.

Parameter settings: In the LoRa example, after entering the parameter setting interface, you can set parameters such as device address and LORA network (Net, Channel). In the Setting interface, click the button to wrap the list, as shown in the figure below, double-click the button to enter the parameter setting interface.



图28 Parameter interface

After entering a parameter modification interface, as shown in the figure below, the first row is the parameter value,  which means to save, and  to return to the previous level; With a single click, the action flag cycles through the four options, and the background of the action flag changes to a dark color when the action flag is on one option.



图29 Schematic diagram of the parameter subinterface

Parameter modification example: The operation flag moves to the first row, double-click the key, as shown in the figure below,

Chapter 5 Operation

after the triangle appears, click the key, click once, add 1 to the value, and repeat the cycle of 0-9. Once the value is determined, double-click the key and the triangle disappears. The action flag moves to , double-click the button to save the settings. The operation flag moves to the  Setting interface.



图30 Operation diagram

Example of zero point zeroing: For example, when the detection value is inaccurate in an environment where the pressure difference between the two ends of the sensor is 0pa, it can be zeroed to zero. With the pressure environment at both ends of the sensor consistent, enter the Setting interface, click the button to wrap the list to ZeroSet, double-click the button to calibrate, and wait for the prompt to successfully calibrate and the calibration is completed.

Chapter 5 Operation



图31 Operation diagram

The page parameters table is as follows:

Table 5 Parameter list

page	Parameter Name	Value range	Note:
Setting	Address	LoRa: 1-99 RS485: 1-64	Device address
	Net	1-99	LoRa Network ID (LoRa version only)
	Channel	0-83	LoRa Network Channel (LoRa version only)
	Baudrate	1-64	Baud rate (RS485 version only)
	ZeroSet	/	Zero point calibration zero

Chapter 5 Operation

page	Parameter Name	Value range	Note:
	Exit	/	Exit
Address	/	LoRa: 1-99 RS485: 1-64	You can modify the device address
Net	/	1-99	You can modify the LoRa network ID of the device
Channel	/	0-83	You can modify the LoRa network channel of the device
Baudrate	/	4800 9600 19200 38400 57600 115200	The baud rate of RS485 communication can be modified

10.3 The device is on the cloud

This product can be bound to the device through the "World Power Device Assistant" applet or web terminal to realize remote

Chapter 5 Operation

monitoring, abnormal alarms, data reports and other functions.

1.1.1 5.3.1 Device cloud platform

(1) Mini program

Search for the mini program "World Electric Device Assistant" in WeChat and add the mini program.

(2) Web

Web Address: <https://hnsd.weixinzjit.com/wessass/#/login>

1.1.2 5.3.2 Adding Devices

Step 1: Enter the mini program project device management interface

Click Projects - Select Projects - Click  - Click - Device Management.



图32 Enter the project equipment management interface

Chapter 5 Operation

Step 2: Add the device

Click the + sign in the upper right corner of the device management page, select the product, select the addition method, you can add it manually, scan the code to add or scan the QR code to add.

Select Add Manually: After clicking Next, select the Device Serial Number (SN), tap Next, and click Confirm Device.

Select Bluetooth: Click Search, select a device you searched, click Save, and click Confirm Device.

Select Scan QR code: Click Search, scan the device QR code, and click Confirm device.

Add manually:



图33 Add manually

Chapter 5 Operation

Scan the code to add:



图34 Scan the device QR code to add

Bluetooth adds:



图35 Bluetooth added

Chapter 5 Operation

1.1.3 5.3.3 Guidelines for using the device cloud platform and mini program

For example, after the device is successfully added, you can view the device in the project. Click Projects - Select Projects - Click  - Click - Device Management.



Click on the device name  to go to the device control page. By default, the device information page is opened, and you can query the device information and network information on the device information page.

Chapter 5 Operation



Click Status to view the status information of each device on the Device Status page. (Note: For low-power devices, you need to identify the device in O&M and wait for up to 1 reporting cycle before the device is successfully identified.)



Click Configure and click Query to query the values of each

Chapter 5 Operation

attribute of the device.

Select the attribute you want to modify, modify the attribute value, and click Sync.

(Note: For low-power devices, you need to identify the device in O&M and wait for up to 1 reporting cycle before the device is successfully identified.)



Click O&M to restart, restore, identify, and upgrade the device.

Chapter 5 Operation



Tap Restart, tap OK, and the device will restart.



Click Factory Reset, click OK, and the device attribute values will be restored to factory defaults. (Note: Please operate with caution)

Chapter 5 Operation



Tap Recognize, and the device will enter the recognition state, and the recognition countdown will be displayed.



Chapter 5 Operation

Click Firmware Upgrade, tap Upgrade, and the device will enter the upgrade state and wait for the upgrade to end. (Note: Not necessary, no upgrade is required, please proceed with caution)



10.4 Device local Bluetooth configuration

Step 1: Enter the mini program and search for the device via Bluetooth

Tap ⊕ - Tap Search Device. When you search for the device you want to connect to, you can click Stop search.

Chapter 5 Operation



图36 Bluetooth search device

Step 2: Bluetooth connection device

Click the device name to connect the device.

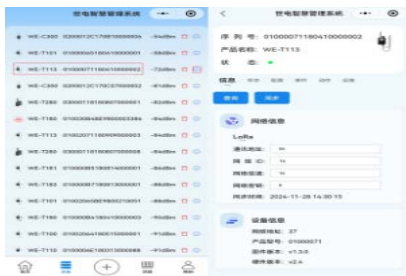


图37 Bluetooth connected devices

10.5 Precautions for use

This product has the function of real-time reporting of thresholds: during the reporting interval, if there is an abnormality in the collection data (exceeding the set threshold, it needs to be set in

Chapter 5 Operation

advance), the set of data will be reported immediately (the device collection cycle is 1 minute by default, and the reporting period is 1 hour by default, both can be adjusted).

Chapter 11 Fault analysis and troubleshooting

The table below lists the problems that may arise with the micro differential pressure transmitter and the solutions, if your problem is not listed or the solution does not handle your problem, please contact us.

Table 6 Common fault analysis and troubleshooting

Fault phenomenon	Cause analysis	Elimination methods
The meter is not displayed	The battery is low	Replace the battery with a new one
The pressure value is small	The pressure hole is blocked	Remove the gauge and clean the pressure hole
Unable to receive data	The 4G/NB network can judge the meter status through the indicator light, and if it is not successfully	(1) Install the SIM card correctly, (2) Contact the network operator to set up the network, or check the signal strength of the local 4G network.

Chapter 6 Fault Analysis and Troubleshooting

	stationed on the network, it will check: Whether the SIM card is installed correctly and whether it is in the Wi-Fi service area.	
	The LoRa network is not connected	Check whether the supporting gateway is connected Whether the parameters of LoRa and the gateway are consistent

Chapter 6 Fault Analysis and Troubleshooting

Fault phenomenon	Cause analysis	Elimination methods
The card is unreadable	The card is not inserted/the card is not charged/the card is bound	Reinsert Check card fee renewal The card is unbound
There is no data on the platform	There are bugs in general procedures	Check the procedure

Chapter 12 Warranty and after-sales service

The company promises to customers that if there is a product quality problem during the warranty period, the company will implement an unconditional three-guarantee service for products with quality problems, that is, free repair, replacement or return. All non-customized products are guaranteed to be returned or exchanged within 7 days (excluding damaged products), and customized products are subject to the warranty agreed in the contract.

Disclaimer

During the warranty period, product failures caused by the following reasons are not covered by the three guarantees:

- (1) Product failure caused by improper use by the customer.
- (2) The customer disassembles, repairs and modifies the product by himself, causing product failure.

Chapter 13 Appendix Data Communications

1. Data format

The default data format for Modbus communication is: 115200, n, 8, 1 (baud rate 115200bps, 1 start bit, 8 data bits, no check, 1 stop bit).

2. Information Frame Format (xx represents one byte)

a) Read data instruction frames

01	04	xx xx	xx xx	xx xx
----	----	-------	-------	-------

Address Function Code Register Start Address Number of Registers

CRC Check Code (low byte first)

b) Read the data response frame

01	04	xx	xx..... xx	xx xx
----	----	----	------------	-------

Address Function Code Number of Bytes Answer Data CRC Check

Code (low byte first)

c) Write data instruction frames

01	06	xx xx	xx xx	xx xx
----	----	-------	-------	-------

Address Function Code Register Address Write Data CRC

Checksum (Low Byte First)

d) Write data response frames

01	06	xx xx	xx xx	xx xx
----	----	-------	-------	-------

Appendix Data Communications

Address Function Code Register Address Write Data CRC
Checksum (Low Byte First)

e) Write multi-data instruction frames

01 10 xx xx xx xx xx xx... xx
xx xx

Address Function Code Start Register Address Number of Registers
Number of Bytes Write Data CRC Check Code (low bytes first)

f) Write a data response frame

01 10 xx xx xx xx xx xx

Address Function Code Start Register Address Number of Registers
CRC Check Code (low byte first)

3. Register address

Table 7 Enter the register

Input		
Address	Description	Note:
0x0000	PID is 16 places higher	
0x0001	PID is 16 bits lower	
0x0002	SN byte1 byte2	
0x0003	SN byte3 byte4	
0x0004	SN byte5 byte6	
0x0005	SN byte7 byte8	
0x0006	SN byte9 byte10	

Appendix Data Communications

0x0007	Software version byte3 byte2	
0x0008	Software version byte1 byte0	
0x0009	Hardware version	
Reserved		
0x0010	Device status	0 Normal 1 Call the police 2 Error
0x0011	The alarm code is 16 digits higher	
0x0012	The alarm code is 16 digits lower	
0x0013	The fault code is 16 digits high	
0x0014	The fault code is 16 digits lower	
0x0015	Current static pressure	Pa
0x0016	Plate temperature	The data step size is 0.1

Table 8 Keep registers

Holding		
Address	Description	Note:

Appendix Data Communications

0x0000	Device ID	1-64 The initial default value is 1
0x0001	RS485 baud rate gear selection	0:4800bps 1:9600bps 2:19200bps 3:38400bps 4:57600bps 5:115200bps The default is 5:115200bps
0x0002	System time is high	
0x0003	The system time is low	
Reserved		
0x0010	High threshold for static pressure	
0x0011	Static pressure low threshold	
0x0012	Static pressure high limit	
0x0013	Static pressure low limit	

4. Command examples

a) Measurement Instructions:

Appendix Data Communications

Request frame: 01 04 00 15 00 01 20 0E

Answer frame: 01 04 02 00 32 38 E5

Example reading: 00 32, i.e. 50Pa

Chapter 14 Appendix Selection and Ordering

WE-T103 product selection parameter table	
Parameter	Selection code and specification
Communication mode	LR: LoRa
	4G: 4G/Cat1
	RS: RS485
	NB: NB2
A accuracy level	A1: 1%
	A2: 2%
R range range	R1: $\pm 100\text{Pa}$
	R2: $\pm 500\text{Pa}$
	R3: $\pm 1000\text{Pa}$
	R4: $\pm 1500\text{Pa}$
Power supply mode	P0: Battery powered
	P1: 9~30V DC power supply

For example, WE-T103-LR-A1-R2-P0

LoRa wireless micro-dropout transmitter, 1% accuracy, $\pm 500\text{Pa}$

Appendix Selection and Ordering

detection range, battery powered



WES

For more inquiries, please scan the QR code

Service hotline: 0086-21-33675566

Hainan Shidian Technology Co., Ltd.

store.west-hn.com