深圳天圆数码科技有限公司
TZONE DIGITAL TECHNOLOGY CO.,LTD

WF503C

CO_2, Temperature & Humidity Sensor

---User Manual V1.0

1 Product Overview

WF503C is a high-tech product developed by our company based on Internet of Things technology. It simultaneously measure CO_2 concentration, temperature and humidity, and is widely used in food, catering, logistics and HACCP - system - certified industries.

Via WiFi data transmission in conjunction with a cold-chain Internet of Things platform, customers can remotely view, monitor and manage real-time data online through browsers or smartphone wireless terminals. Alarm notifications can be sent via the platform and a built-in buzzer.

WF503C is a temperature and humidity sensor integrated with CO_2 detection. It has a built-in, replaceable 3.6V lithium battery and provides real-time data upload and platform alarm services.

2 Product Applications

- Freezers, refrigerators, etc.
- Agricultural greenhouses, etc.
- Workshops with inconvenient wiring.
- Catering, food, and HACCP - system - certified industries, etc.
- Pharmaceutical warehouses, biochemical laboratories, etc.

3 Product Features

1. Adopts a high-concentration CO_2 sensor and an SHT30 temperature and humidity sensor, featuring strong anti-interference capability, high accuracy and fast response, and specially designed for measuring high-concentration CO_2 environments.
2. Built-in replaceable 8,000mAh / 3.6V battery for ultra-long standby time.
3. Connects to a WiFi access point and uploads collected data to the platform in real time.
4. The transmitter supports three operating modes: Normal Mode, Low-Voltage Mode and Over Limit Mode, enabling more effective and intelligent monitoring of CO_2 concentration, temperature and humidity.

5. Capable of storing up to 18,368 data records; server-side storage is unlimited.
6. Equipped with an LCD display for direct viewing of CO_2 concentration, temperature and humidity data, alarm status, WiFi status, battery level and other information.
7. Supports NFC function for easy parameter configuration.
8. Built-in buzzer for alarm when temperature or humidity exceeds preset limits.

4 Product Specifications

Item	Specification
Measured Object	CO_2, Temperature & Humidity
Battery	Built-in 8,000mAh / 3.6V Lithium Battery
Measuring Medium	Air
Sensor Range	CO_2: 0 ~ 100 vol% Temperature: -40℃ ~ +125℃ Humidity: 0 ~ 100%RH
Accuracy	CO_2: ±0.5（0.2-2.0）vol% Temperature: ±0.3℃ (0~60℃), ±0.5℃ (other ranges) Humidity: ±2%RH (10~90%RH), ±4%RH (other ranges)
Operating Environment Temperature	-30℃~+60℃;
Operating Environment Humidity	5%RH ~ 95%RH (non-condensing)
Communication	WiFi
Configuration Method	NFC
WiFi Frequency Band	2.4GHz/5GHz
WiFi Standard	802.11b/g/n
Upload Interval	Default 60 minutes, 4 sets of data uploaded at a time (i.e., 1 set recorded every 15 minutes), customizable by users
Temperature & Humidity Alarm	Supported, user-definable
Battery Life	2 years (at default 60-minute upload interval)
IP rating	IP65
Memory Capacity	18,368 data sets
Dimensions	99mm*85mm*28mm
Weight	174g

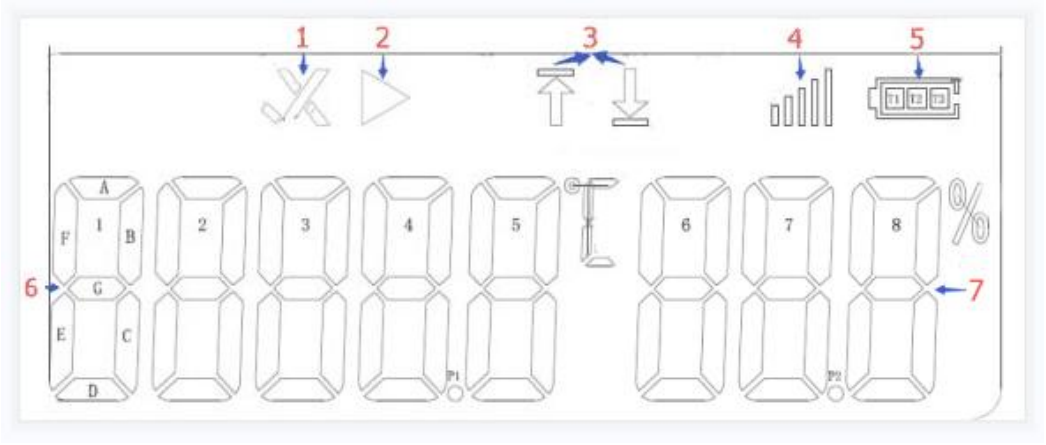
5 Working Modes

Working Mode	Working Status
Normal Mode	The transmitter activates the module to send data according to the set collection interval and transmission frequency
Low Voltage Mode	When the transmitter voltage is lower than 2.5V (configurable), it collects and sends data at a 30-minute interval (configurable) with the set transmission frequency. The transmitter power is nearly exhausted at this time, and the customer should replace the battery in a timely manner
Alarm Mode	When the ambient CO_2 and temperature and humidity exceed the user-set range, the transmitter can collect and send data according to the set collection interval and transmission frequency after the alarm (both configurable), facilitating customers to record changes in ambient temperature and humidity

Note: Priority order: Alarm Mode > Low Voltage Mode > Normal Mode

6 LCD Display Description

The LCD turns off in the device's shutdown mode and turns on in the startup mode, displaying WiFi status, temperature & humidity alarm indicator, operation status, temperature value and humidity value.



Item	Function	Illustration
1	CO_2, Temperature & Humidity alarm signs	Normal: √ Alarm: ×
2	Operating status	▷ Start operation
3	CO_2, Temperature and humidity out-of-range indicator	Over the upper limit: ↑ Over the lower limit: ↓ Both the upper and lower limits are over: ↑↓
4	WiFi signal strength	 : Very strong signal  : Strong signal  : Good signal  : Normal signal  :Weak signal No display: not connected to WiFi
5	Battery status	 : High battery  : High battery  : Normal power  : Low battery
6	Temperature value	Optional Celsius or Fahrenheit display (set by 08 command), unit 0.1, display when the sensor is abnormal ------
7	Multi-function Zone	1. Displays CO_2 concentration by default, with a unit of 0.1%. Shows 100% when reaching 100%, and displays --- when the sensor is abnormal. 2. Displays humidity when switching to the temperature & humidity interface, with a unit of 0.1%. Shows 100% when reaching 100%, and displays --- when the sensor is abnormal. 3. Displays NFC in NFC mode 4. Displays OFF in shutdown mode

7 Switch operation and indicator status

1) On -off operation and device status

Operation	Operation Method	Indicator Light Status	LCD Display	Description
Power On	Press and hold the button for 3 seconds	Green indicator light stays on for 5 seconds	Default interface displayed	The device starts operating
Power Off	Press and hold the button for 3 seconds	Red status light stays on for 5 seconds	OFF displayed	The device stops working
Data Sending	Short press the button once	Green status light flashes once	Default interface displayed	The device sends data
Enter NFC Mode	Touch the NFC antenna area with a mobile phone	Green status light stays on for 10 seconds	NFC displayed	The device enters NFC mode for configuration

Note: Please make sure the power button is turned to ON when switching on/off the device.

2) Indication of the current status light of the device

Device Status	LED Light	Description
Data Sending Abnormality	Red light flashes every 10 seconds	Not connected to WiFi or the server
NFC Mode	Green light stays on for 10 seconds	Exits NFC mode 10 seconds after moving the mobile phone away from the NFC antenna area

8 Alarm Mode

Users can set the temperature and humidity range using the configuration software to enable the temperature and humidity alarm function. When the temperature or humidity exceeds the set limits, the device enters the alarm mode, in which it immediately sends a set of alarm data and then collects and sends data according to the user-set collection interval and transmission frequency. The alarm mode is canceled and the original collection interval is restored when the temperature

and humidity return to normal.

The device is equipped with a local buzzer alarm function in the alarm mode. If the buzzer function is enabled (always beeping by default), the buzzer will activate according to the set duration.

Ways to turn off the buzzer:

1. The temperature and humidity return to normal;

2. The platform sends the 037 downlink command;

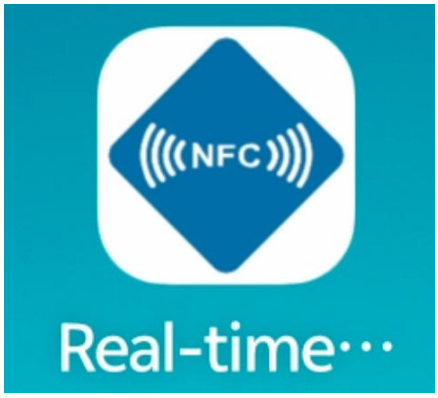
3. The set buzzer working duration ends;

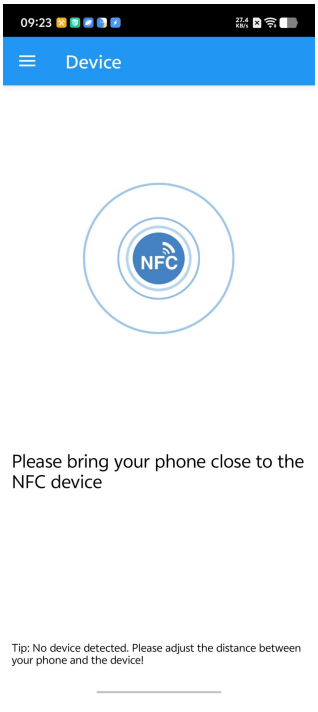
4. Press the button.

Note: The buzzer will only be activated again if the temperature and humidity become abnormal again (return to normal first and then exceed the limits) after the buzzer stops working.

9 NFC Configuration

1. Open the NFC configuration tool of our company on the mobile phone: Real-time Data Logger.

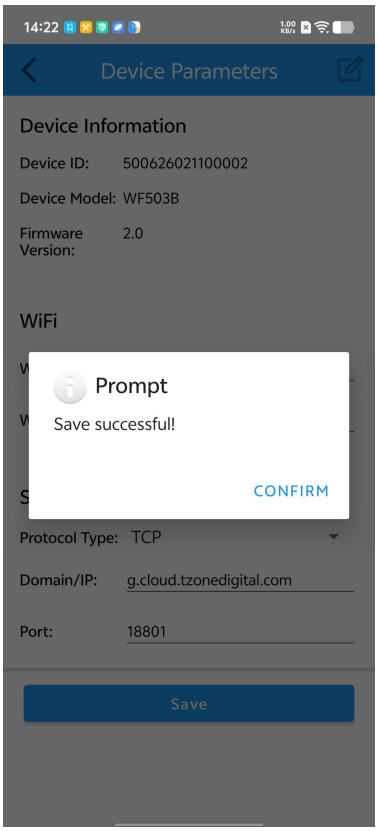




2. Touch the NFC area of the mobile phone to the NFC area of WF503C; the LCD displays "NFC", indicating that the device has entered the NFC mode.

3. Click the edit button in the upper right corner, configure the parameters and click "Save".

4. Touch the NFC area of the mobile phone to the NFC area of WF503C again to save the settings; a pop-up prompt of "Save successful!" indicates that the configuration is completed.



10 Data Query

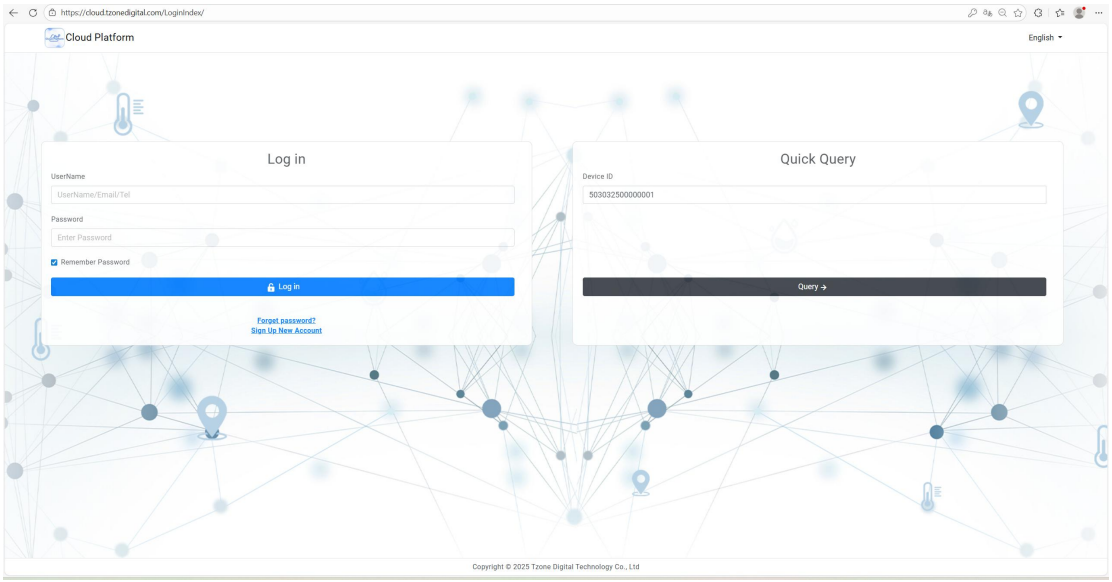
10.2 Browser Query

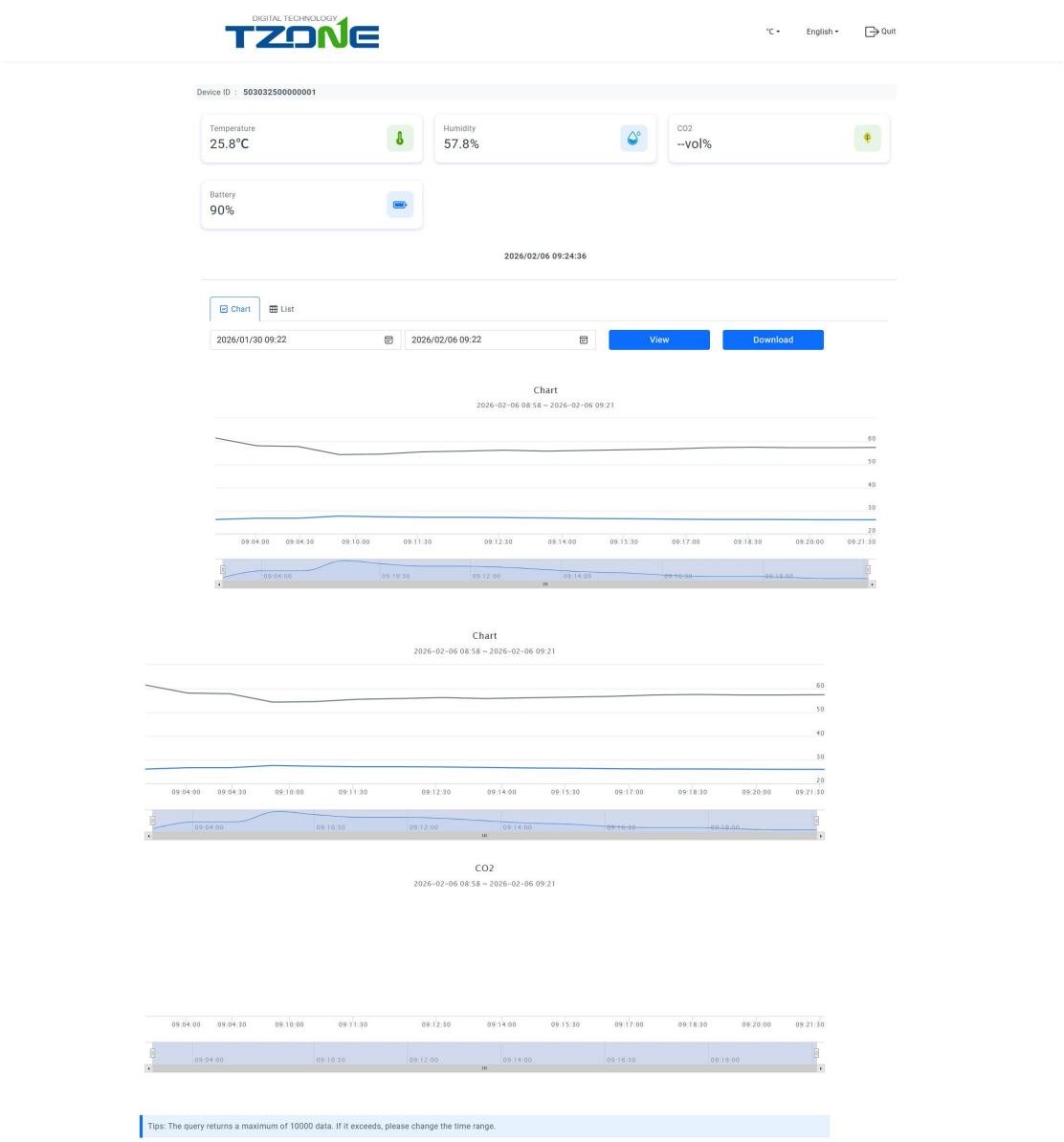
Tzone Temperature and Humidity Cloud Platform Website: http://cloud.tzonedigital.com/

After powering on, configure Wi-Fi and other parameters using the NFC configuration tool "Real-time Data Logger" APP. Users can then query data on the Tzone platform. To access the platform, you must first register a user. After logging in, add the WF503C IMEI in "Device Management." After adding the device and powering it on, users can query the data once the machine reports data.

Note: The device's default reporting interval is 60 minutes, and the recording interval is 15 minutes. It sends 4 data entries to the server at a time. Users can also press a button, and the device will immediately send data.

Data query steps are as follows:


https://cloud.tzonedigital.com/LoginIndex/
Cloud Platform
English
Log in
UserName
UserName/Email/Tel
Password
Enter Password
Remember Password
Log in
Forget password?
Sign Up New Account
Quick Query
Device ID
503032500000001
Query
Copyright © 2025 Tzone Digital Technology Co., Ltd


DIGITAL TECHNOLOGY
TZONE
°C
English
Quit
Device ID : 503032500000001
Temperature
25.8°C
Humidity
57.8%
CO2
--vol%
Battery
90%
2026/02/06 09:24:36
Chart
List
2026/01/30 09:22
2026/02/06 09:22
View
Download
Chart
2026-02-06 08:58 ~ 2026-02-06 09:21
Chart
2026-02-06 08:58 ~ 2026-02-06 09:21
CO2
2026-02-06 08:58 ~ 2026-02-06 09:21
Tips: The query returns a maximum of 10000 data. If it exceeds, please change the time range.

10.1 Mobile Phone Query

After adding the device,scan the QR code on the device with a mobile phone camera or browser to enter the data interface. The interface displays real-time data including Device ID, temperature, humidity and battery level, and also supports viewing historical data in list or chart form, as well as data viewing and downloading by time range.