EXO-MINI ONE Bluetooth Wireless Transmission Module（Smurfs）User Manual

Hangzhou Chemins IoT Sensing Technology Co., Ltd.

Tel: 0571-87185831　0535-3463801

E-mail: service@chemins-tech.com　Website: www.chemins-tech.com

Address: Room 904, Building 17, Singapore Science and Technology Park, Qiantang

District, Hangzhou City, Zhejiang Province

User Notice

- Please read this manual carefully before use and keep it for reference.

- Please observe the operation rules and precautions of this manual.

- When receiving the instrument, please open the package carefully and check whether the instrument and accessories are damaged due to transportation. If any damage is found, please notify the manufacturer and distributor immediately and keep the package for posting.

- When the instrument fails, please do not repair it by yourself. Please contact the after-sales department of the manufacturer directly.

catalogue

一、 Principle of operation

The EXO-MINI ONE Bluetooth Wireless Transmission Module（hereinafter referred to as the **Smurf**） can be used with all kinds of IOT sensor and 206 series sensors or online multi-parameter self-cleaning sensors with RS-485 interface in our company. It is convenient to replace and use Bluetooth for data transmission in the case of environment is not allowed or wiring is not convenient.

The **Smurfs** can be connected to mobile devices such as Android-based mobile phones or tablet computers through Bluetooth, and the **Smurfs APP** carried on them can carry out data interaction.

二、 Technical performance and specifications

1. Technical parameters

Name	Bluetooth Wireless Transmission Module（Smurfs）
Model	EXO-MINI ONE
Range ability	set by sensor
Output mode	ASCII Bluetooth transmission
Input mode	hexadecimal Bluetooth transmission
Transmission distance	open area without barrier, about 50 meters
Storage capacity	4 megabytes
Working hours	timing read about 7 days
Power supply	3.7V/3000mAh polymer lithium battery 5V charge

2. Main body dimension drawing

sensor interface

charging port switch

diameter * length：φ30*126mm

3. Electrical connection and data communication

3.1 Cable Definition

The aviation plug wiring of the collector is defined as:

1	2	3	4
12V	GND	485B	485A

3.1.1 When making the connector, please repeatedly test whether the wiring sequence is correct, so as to prevent the failure of communication due to errors.

3.1.2 Cable definition: red wire - power wire (12V), black wire - ground wire (GND), blue wire - 485A, white wire - 485B.

3.2 Communication Protocol

The default data format of MODBUS communication is: 9600, n, 8, 1 (baud rate 9600bps, 1 start bit, 8 data bits, no parity, 1 stop bit).

3.3 APP environment

Smurfs APP operating environment: **Android system**.

三、 Use and maintenance

1. Software Installation

1.1. The Smurfs APP download QR code label is attached to the Smurfs, scan the code through the browser of Android mobile, and select the software version corresponding to the software version on the label on the page to download. After downloading, install the software.

1.2. After the installation is successful, enter the Smurfs APP, the first time you enter, there will be a prompt message for permission to open.

1.3. Click to go to open now, click Allow to open the location permission and storage permission, some mobile phones have the location button function in the menu bar, you need to enable the location information button.


1.4 The product needs to use the Bluetooth function, please turn on the Bluetooth switch first. If the bluetooth switch is not turned on, during use, the software will prompt to turn on the bluetooth switch.

2. Device Connection

2.1 Refresh device

After entering the program, enter the connection management page, pull down the screen, and refresh the list of available devices.
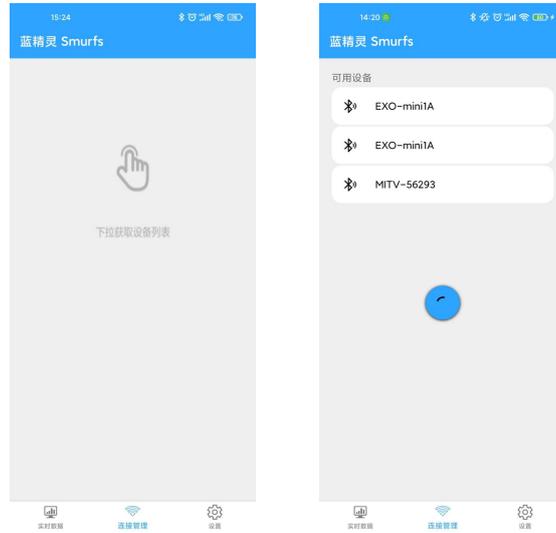
2.2 Connecting the device

Click the device you want to connect in the available devices to connect the device.

2.3 Disconnect the device

In the available devices column, click the connected device again to disconnect the device. disconnected device

It will be removed from the available device. If you use the device again, you need to pull down to refresh again and reconnect.

3. Real-time Data

After connecting the device, click on the real-time data to enter the real-time data page, the system will automatically obtain the device address and type of the connected device, this process will last for several seconds, and the real-time data of the sensor will be displayed after the refresh is completed. When reading the MPS-400, the value display will be 0 during brush rotation.
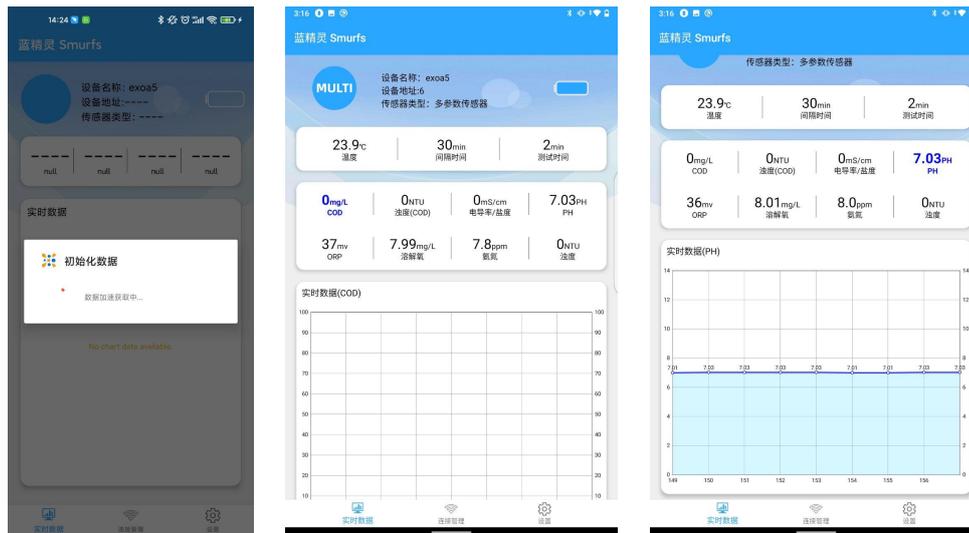
After the data is obtained, the system will display the data on the real-time data page. It is divided into three parts from top to bottom. The first part shows the sensor device type, sensor device address, device name, device avatar, and power display.

The second part shows the sensor device temperature, interval time and test time. Interval time and test time are used for the storage of historical data. The interval time is the data storage time; the test time is the data stabilization time before the data is stored, which is used to collect the sensor data and store the last data in the memory, so the interval time is always greater than the test time. Data cannot be stored when Bluetooth is connected and when the Smurfs turn off the switch.

The third part is the data line graph part, which is used to display the currently selected attribute data. Click the corresponding data frame (the second part) to display the line graph of the corresponding data.

4. Device Name Modification

The device name is the exclusive term used by the Smurfs APP to identify the Smurfs device. After the Smurfs leave the factory, there will be a default name. After connecting the device, the user can modify the device name. The device name consists of 3-18 numbers or letters. The user clicks the Confirm Modification button, the system will prompt the device name to be reset successfully, and then the system will automatically disconnect the Bluetooth connection. After that, the user needs to turn off the Smurfs switch and turn on the switch after 3-5 seconds to modify successfully.
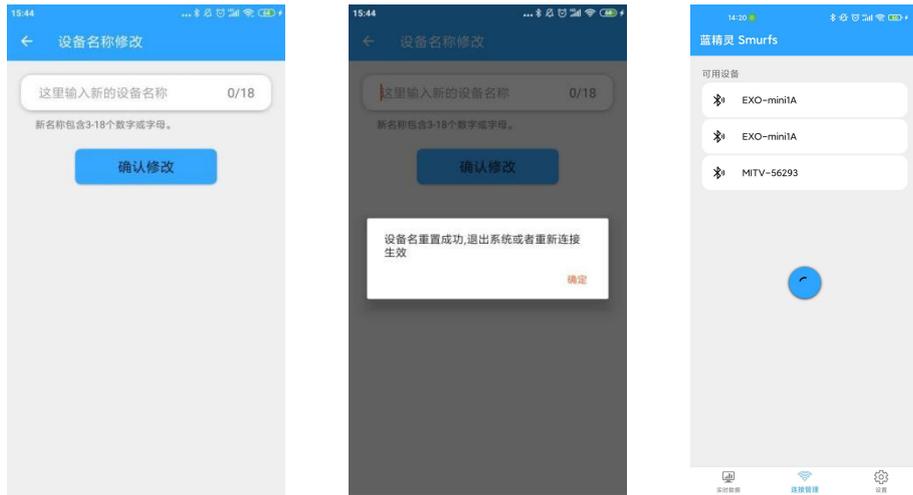
5. Historical Data

5.1 Read historical data

Historical data is a collection of sensor device data periodically stored by the Smurfs device. When the device is powered on and not connected by the user, data is periodically stored according to the interval time and test time. The Bluetooth module can store 300,000 pieces of data.

Entering the historical data page, the software obtains the number of historical data stored in the current Smurfs device and displays it on the page. The user can decide whether to read the historical data according to the corresponding data number and time.

The Historical Data page consists of three parts. The first part is the attribute button, which can display the line graph data of the corresponding parameters by clicking on different parameters. The total number of data bars refers to the sum of the historical data stored by the Smurfs device,

including the data volume of all parameters. The second part is a line graph, which is used to display the historical sensor data of the device. The third part is the buttons for clearing historical data and downloading historical data. Click the button to view historical data for the parameter.

5.2 Clear historical data

Clearing historical data means clearing all historical data stored in the Smurfs memory. Once the data is deleted, it cannot be rolled back. Click the Clear History Data button, the system will prompt the clear status.

5.3 Download historical data

The function of downloading historical data is to download all historical data stored in the Smurfs memory to mobile devices such as mobile phones, and the data downloaded on the same day will be stored in the same file. Click the OK button to download the historical data. The file directory is the "Smurfs" folder in the root directory of the phone. In the Smurfs folder, all downloaded historical data are stored, and the date is used as the name of the folder. Open the file of the corresponding attribute, you can see all the historical data of the attribute.

6. Sensor **Calibration**

6.1 Device address calibration

Device address setting is the function of the Smurfs device to set the sensor device address for users to customize the settings. Generally, the initial default value of the device address is 6, and the data range is 1-127. After connecting the device, the user can customize the device address settings.
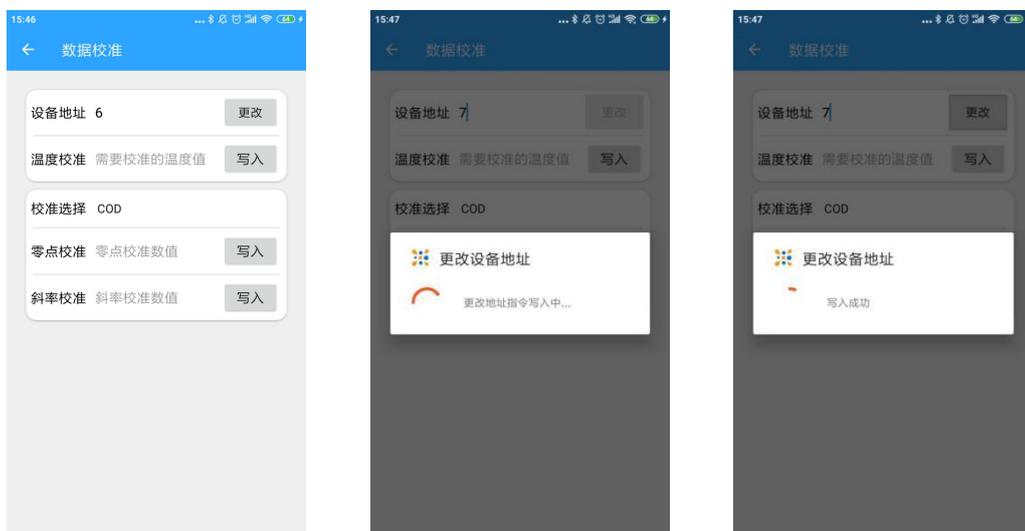
After the input is completed, click the Write button, and the system will prompt the write status.

6.2 Temperature Calibration

Temperature calibration is the calibration of the temperature value of the sensor connected to the Smurfs. According to the temperature of the set standard solution, write the specific temperature value in the input box, click the button to calibrate the value, and the temperature can be written to one decimal place.

After the input is completed, click the Write button, and the system will prompt the write status.

6.3 Zero calibration

First, select the corresponding sensor type in the calibration selection, enter the corresponding value in the input box according to the calibration document or calibration rules, and click the write button to perform zero calibration. For multiple parameter devices, etc., a sensor selection box will be displayed, and the user can choose to calibrate a certain sensor.
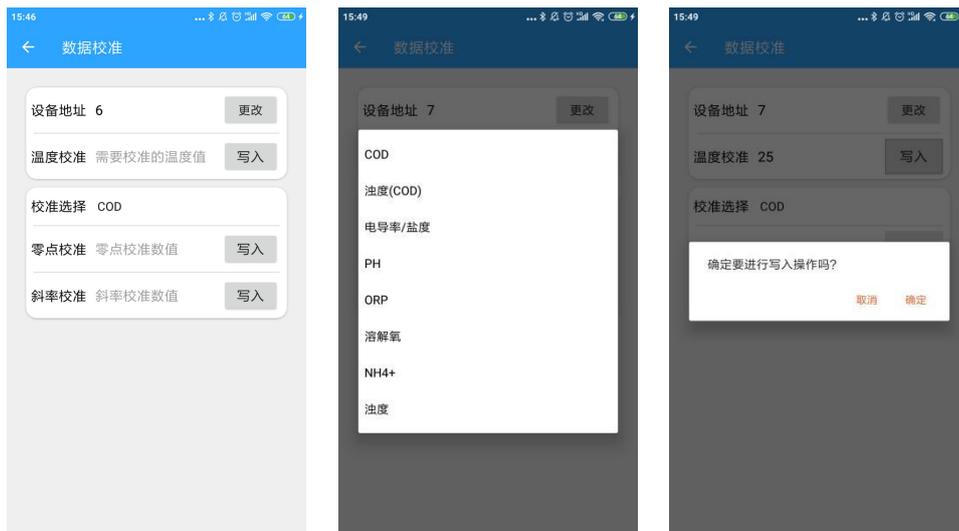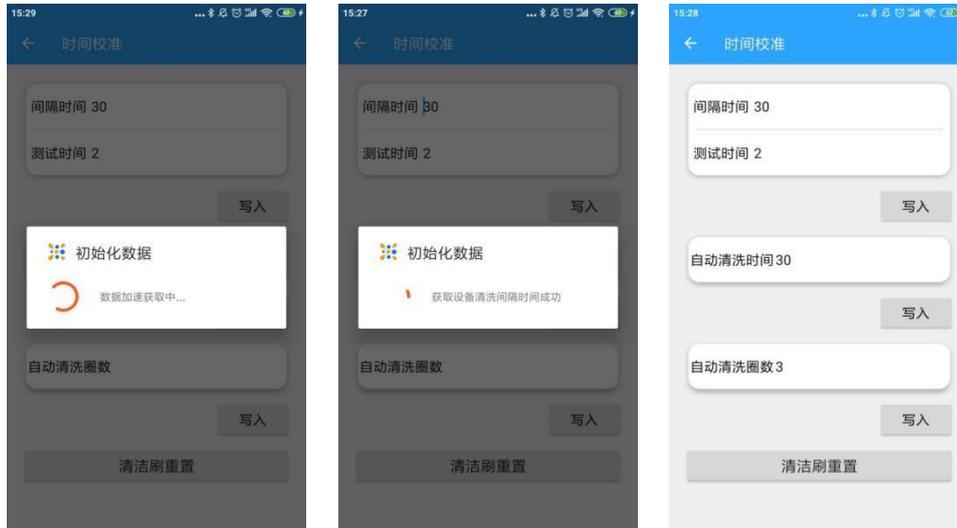

After the input is completed, click the Write button, and the system will prompt the write status.

6.4 Slope calibration

The slope calibration is also based on the calibration document or calibration rules, enter the corresponding number in the input box, and click the write button to carry out. For multiple parameter devices, etc., a sensor selection box will be displayed, and the user can choose to calibrate a certain sensor. After the input is completed, click the Write button, and the system will prompt the write status.

7. Time Setting

Click the interval time box or the test time box on the real-time data page to enter the time setting page. If it is a multi-parameter device and it is entered for the first time, the automatic cleaning time and automatic cleaning cycle value of the device will be automatically obtained first.

7.1 Time Setting

The time setting needs to fill in the complete interval time and test time. The interval time should be greater than the test time. After filling in, click the write button to write the command, and the system will prompt the write status. The initial default interval is 30 minutes and the test time is 2 minutes. If the input data is unreasonable data, the corresponding prompt information will be displayed.

7.2 Automatic cleaning interval setting

The automatic cleaning interval occurs in multi-parameter devices or in a single sensor carrying a cleaning brush. The automatic cleaning interval indicates the working interval of the cleaning brush. The initial default time is 30 minutes, and the optional data range is 6 - 6000 minutes. After the input is completed, click the Write button, and the system will prompt the write status.

7.3 Automatic cleaning lap setting

The number of automatic cleaning circles refers to the number of circles the cleaning brush rotates each time the equipment is cleaned. The initial default value is 3 turns, and the data range is 0-10 turns. After the input is completed, click the Write button, and the system will prompt the write status. If the input data is unreasonable data, the corresponding prompt information will be

displayed.

7.4 Reset auto wash time and auto wash laps

To reset the cleaning brush function, is to set the automatic cleaning time and automatic cleaning cycles of the cleaning brush to the default values. The initial default time is 30 minutes, and the initial default number of laps is 3 laps. Click the button, the system will prompt the write status.

8. About The Software

Display software version information.

9. Language Selection

The current language option satisfies the function of switching between Chinese and English. The user selects one of the languages and clicks the switch button to switch the language.
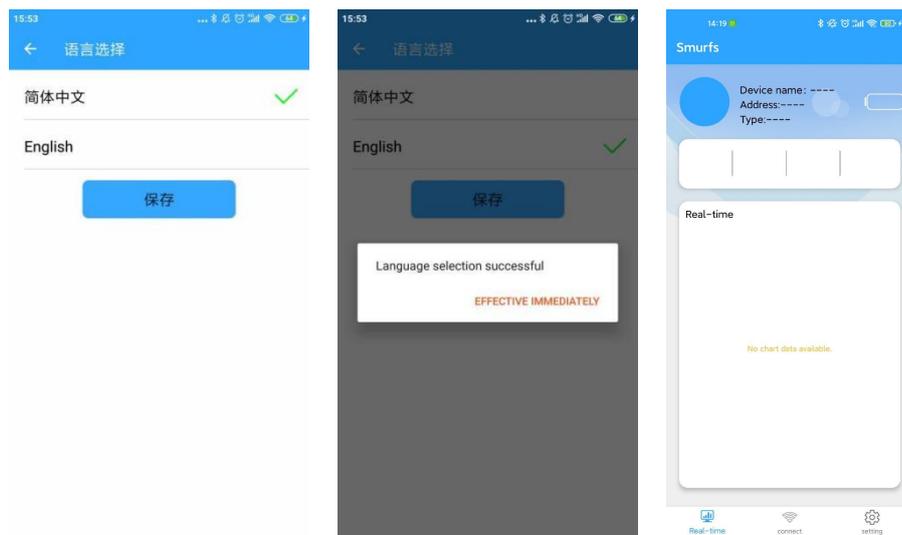
10. Notes

- Avoid water and sunlight exposure.
- The switch needs to be turned on during the charging process, and the charger should be unplugged in time after the battery is fully charged to prolong the battery life and reduce potential safety hazards.
- After each sensor replacement, perform address reading before other operations.

- Avoid any direct mechanical stress (pressure, scratches, etc.) on it during use

- After the device name is modified, you need to turn off the power of the device, and wait for 3-5 seconds to turn on the power before the name can be modified successfully.

- Before the Smurfs store historical data, it must first read the real-time data of the connected sensors, and then disconnect the connection to store the historical data.

11. Common Problems And Countermeasures

Problem	Possible Reason	Solution
Sensor cannot read data	water in the equipment	Please contact us
	low battery	5V type-C port charging
	Signal is not good	try again
Historical data is empty	No historical data is stored	Canonical storage of historical data
	Power off or low battery	Turn on the switch or charge
Calibration command write failed	data write error	Operate according to the manual
	Data instability causes interference	After the data is stable, continue the calibration
Failed to set name	No restart or restart time is too short	Operate according to the manual

四、 Quality and Service

1. Quality Assurance

- The quality inspection department has standardized inspection procedures, has advanced and complete testing equipment and means, and strictly follows the inspection procedures, and conducts 72-hour aging experiments and stability experiments on products, and does not allow a

substandard product to leave the factory.

- The consignee will directly return the product batches with a failure rate of 2%, and all the costs incurred shall be borne by the supplier. The criteria for consideration refer to the product description provided by the supplier.

- Guarantee the quantity of supply and the speed of delivery.

2. Accessories and Spare Parts

This product includes:

- EXO-MINI ONE Bluetooth wireless transmission module (Smurfs)   1 set
- Smurfs APP (scan code to download)
- EXO-mini1 A Bluetooth wireless transmission module (Smurfs) user manual   1 copy
- 1 certificate
- USB TypeC charging cable
- Cable 1 meter
- 1 storage bag

3. After-sales service commitment

The company provides after-sales service for the machine within one year from the date of sale, but does not include damage caused by improper use. If you need to repair or adjust, please send it back, but the freight is at your own risk. When sending back, you must make sure that the package is in good condition to avoid shipping. If it is damaged on the way, the company will repair the damage of the instrument free of charge.