



Kaiterra Sensedge Modbus User Manual

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Introduction

The Kaiterra Sensedge is a smart air quality monitor that supports multiple communication methods, including Modbus.

Modbus is a serial communications protocol. It has become a widely used communication protocol in many industries for its easiness of deployment and maintenance.

The Sensedge provides Modbus TCP/IP support via the Ethernet port on the device.

The Sensedge can still upload data to the cloud via Wi-Fi when Modbus is used for local communication.

Please make sure your Sensedge is running the latest firmware.
Navigate to **Settings** -> **Device Details** and check the Firmware Version.

This manual is only applicable for the Sensedge running on firmware higher than V1.5.0.
For earlier versions, please contact info@kaiterra.com for more details.

2.

Setting up Modbus on the Sensedge

A. Turning on Modbus

By default, the Modbus feature is not turned on.

Go to **Settings** → **Device Details** → **Connectivity** → **Modbus** to turn on the feature.

B. Setting the Device ID

On the **Settings** → **Device Details** → **Connectivity** → **Modbus** screen, the Device ID is customizable.

The Device ID is used to identify the device in the system, therefore, each Sensedge should have a unique Device ID, and the Device ID should also be different from other devices in the same system.

A default Device ID is provided in the Device ID field. Please customize your Device ID and make sure each device in the same line has a unique Device ID. The range of allowed Device IDs is 1-247.

It is recommended to set the Device ID on site during or after installation so it is easier to keep track of the Device ID and installation locations.

C. Setting the Connection Type

On the **Settings** → **Device Details** → **Connectivity** → **Modbus** screen, the Connection Type can be toggled between two modes: TCP and RTU.

TCP is supported by using the Ethernet port on your Sensedge. RTU is no longer supported.

D. Setting the Modbus Port

On the **Settings** → **Device Details** → **Connectivity** → **Modbus** screen, the port is customizable.

The default UDP port is set to 30000.

The port can be set to any round number in the range of 1024 – 65535.

It is recommended, however, that the UDP port stays unchanged.

Please consult with your BMS admin before changing the port.

E. Restarting the service

On the **Settings** → **Device Details** → **Connectivity** → **Modbus** screen, there is a Restart Service button.

Please use this button when you need to restart the Modbus service during setup.

3.

Communication Protocol - Modbus TCP

Data type and format: Data length=8

Stop bit=1

Transmission rate=9600

Check: even

Data format	Address	Function	Data	Error check
Data length	1	1	N	16 digit CRC code

Default Modbus address code is 0x01

Commands:

Read Input Register (0x04) command 01 04 00 00 00 05 30 09 to read all input register

Register Address

Address	Content	R/W property	Comments
Input register 0	PM2.5	R	0-999 ug/m3
Input register 1	TVOC	R	0-9999 ppb
Input register 2	Temperature	R	-30.0-50.0°C
Input register 3	Humidity	R	0.0%-100% RH
Input register 4	CO2	R	0-9999 ppm

*Temperature is in absolute temperature $T(k)=273.15+t(\text{celsius})$

*Temperature and humidity have resolution of 0.1, the transmitted data is 10 times of the raw data.
