

*Modbus supported via Ethernet port



EXT-KA-SE100

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Modbus General Notes

General information	Date	18.08.2023
	Product Name	EXT-KA-SE100
	Protocol	Modbus TCP over IP network
Modbus TCP	Port	open (Default: 30000 Range: 1024 - 65535)
	Address	1...247 (Default: 1)
Parameterisation	Tool	through the integrated display



Modbus TCP is supported over Ethernet port only. EXT-KA-SE100 can still upload data to the cloud via Wi-Fi when Modbus is used for local communication.

EXT-KA-SE100 does not support Modbus RTU.

Please ensure your device is running the latest firmware.

Go to Settings / Device Details to check firmware version

Setting up Modbus through integrated display:

1. Enable Modbus: Settings / Device Details / Connectivity / Modbus / Enable

*Select TCP from toggle button. RTU is not supported on this model.

2. Setting Device ID: Settings / Device Details / Connectivity / Modbus / Device ID

*The range of allowed Device IDs is 1-247

3. Setting UDP Port: Settings / Device Details / Connectivity / Modbus / Port

*Default 30000, The range of allowed UDP ports 1024 - 65535

4. Restarting service: Settings / Device Details / Connectivity / Modbus / Restart service

*Use this button to restart Modbus service during setup

Setting up Ethernet connection through integrated display:

1. Settings / Ethernet / Connection status, IP, DNS, MAC address, IP configure method auto or manual.

*Configure IP to manually set IP address, Subnet Mask, and Gateway.

Modbus Register Overview

Register implementation

Data type and format:
 Data length=8
 Stop bit = 1
 Transmission rate = 9600
 Check = even

Default Modbus address code is 0x01

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

*CRC = Cyclic Redundancy Check

Commands

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

Register Address:

Address	R/W Property	Content	Comments
Input Register 0	R	PM2.5	0 - 999 ug/m3
Input Register 1	R	TVOC	0 - 9999 ppb
Input Register 2	R	Temperature	243.15 - 323.15 K**
Input Register 3	R	Humidity	0.0% - 100% RH
Input Register 4	R	CO2	0 - 9999 ppm

Temperature note:

243.15 - 323.15 K (Kelvin)
 -30.0°C - 50.0°C (Celsius)**

*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.

** Since our temperature readings in Modbus are provided in Kelvin, you must convert them to Celsius. You can use the formula above $[T(k) = 273.15 + t(\text{celsius})]$ or you can do this:

1. Take the Modbus reading (ie. 3000)
2. Minus 2732 (ie. $3000 - 2732 = 268$)
3. Divide it by 10 (ie. $268 / 10 = 26.8^{\circ}\text{C}$)