EN

TH-AP Modbus

Indoor and outdoor sensor

Item number 30170



elsner

Manual

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This manual is amended periodically and will be brought into line with new software releases. The change status (software version and date) can be found in the contents footer. If you have a device with a later software version, please check **www.elsner-elektronik.de** in the menu area "Service" to find out whether a more up-to-date version of the manual is available.

Clarification of signs used in this manual



Safety advice.



Safety advice for working on electrical connections, components, etc.

DANGER! ... indicates an immediately hazardous situation which will lead to death or severe injuries if it is not avoided.

WARNING! ... indicates a potentially hazardous situation which may lead to death or severe injuries if it is not avoided.

CAUTION! ... indicates a potentially hazardous situation which may lead to trivial or minor injuries if it is not avoided.



ATTENTION! ... indicates a situation which may lead to damage to property if it is not avoided.

1. Safety and operating instructions

Installation, testing, commissioning and fault repair may only be carried out by a qualified electrician.

BEWARE!
Electric voltage!

- Before installation, check the device for damage. Only operate devices if they are free from damage.
- Comply with local directives, provisions and conditions for electrical installation.
- Immediately switch off the device or system and secure it against accidental activation if safe operating is no longer guaranteed.

Only use the device for building automation and follow the instructions for use in the installation guide and manual. Incorrect use, changes to the device or non-observance of the operating instructions lead to warranty and guarantee claims becoming void.
The device may only be operated as a fixed-site installation, i.e. only when assembled and after conclusion of all installation and operational start-up tasks and only in the surroundings designated for it.
Elsner Elektronik is not liable for any changes in norms and standards which may occur after publication of these operating instructions.

For information on installation, maintenance, disposal, scope of delivery and technical data, please refer to the installation instructions.

2. Description

The **Temperature and humidity sensor TH-AP Modbus** measures temperature and humidity in indoor and outdoor areas and calculates the dew point.

The devices are Modbus slaves with a RS485 interface and a RTU protocol. The Modbus master, such as PC, SPS or MC can read the **Temperature and humidity sensor TH-AP Modbus** measurement values with "Function 04h (Read Input Register)".

Functions:

- Temperature measurement
- Humidity measurement
- Dewpoint calculation

Notes on dew point calculation:

The **TH-AP Modbus** calculates the dew point of the ambient air. This value can be used for dew point monitoring. This would require another sensor for measuring the

surface temperature of the wall or pipe. Also, the dew point needs to be monitored (compare with temperatures) in the Modbus master.

Monitoring predetermines the possible condensate build-up on the surface, giving a chance for timely countermeasures.

3. Transfer protocol

3.0.1. Function 04H read input register

Before the first measurement and in case of a faulty sensor, all registers are at "-32768".

Register	Parameter	Data type	Data value	Range
0	Temperature	Signed 16Bit	-400 to +800	-40 to +80°C
1	Relative humidity	Signed 16Bit	0 to 1000	0 to 100 %
2	Dew point temperature	Signed 16Bit	-400 to +800	-40 to +80°C

3.0.2. Request string from master

Byte no.	Variable		Explanation
0	Slave address	xx	
1	Command	04H	Read input registers
2	Start address high byte	xx	Register start address
3	Start address low byte	xx	
4	Word count high byte	xx	Number of registers to be read
5	Word count low byte	xx	
6	CRC low byte	xx	
7	CRC high byte	xx	

Example request string for reading all data for slave address 1:
01H, 04H, 00H, 00H, 00H, 03H, B0H, 0BH

3.0.3. Output string from master

Before the first measurement and in case of a faulty sensor, all registers are at "-32768".

Byte no.	Register address	Variable		Explanation
0		Slave address	xx	
1		Command	04H	Read input register
2		Number of bytes	xx	Master requirement * 2
3	0	Temperature high byte	xx	with algebraic sign, value/10 = Temperature xx.x °C
4		Temperature low byte	xx	

Byte no.	Register address	Variable		Explanation
5	1	Relative humidity high byte	xx	Value/10 = relative humidity xx.x %
6		Relative humidity low byte	xx	
7	2	Dew point temperature high byte	xx	with algebraic sign, value/10 = Dew point temperature xx.x °C
8		Dew point temperature low byte	xx	
9		CRC low byte	xx	
10		CRC high byte	xx	

Questions about the product?

Please contact your specialist retailer or, if you purchased the product directly from Elsner Elektronik, our technical service at
Tel. +49 (0) 70 33 / 30 945-250 or
service@elsner-elektronik.de

We need the following information to process your service request:

- Type of appliance (model name or item number)
- Serial number or software version
- Description of the problem
- Proof of purchase (invoice)

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