



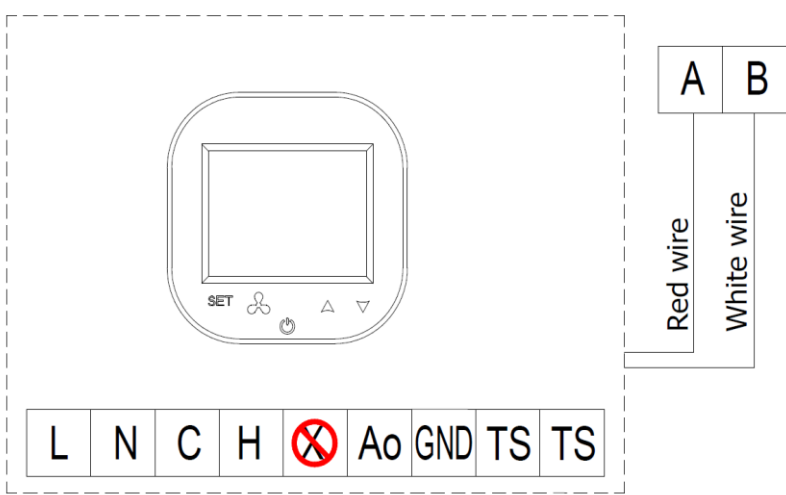
Device integration manual on Modbus RTU

1. Outputs

| Podłączanie BMS (kable) | |
|-------------------------|-----------------------|
| B | RS 485 B (white wire) |
| A | RS 485 A (red wire) |

| Lista zaciskowa | |
|-----------------|--------------------------|
| Ao | wyjście analogowe |
| GND | masa wyjścia analogowego |
| TS | External temp. Sensor |
| TS | External temp. Sensor |

| | |
|----------|------------|
| L | 230 V AC L |
| N | 230 V AC N |
| H | Heating |
| C | Cooling |



The diagram shows a control panel with a screen and buttons labeled SET, fan, and up/down arrows. Below the panel is a terminal block with terminals L, N, C, H, a crossed-out H, Ao, GND, TS, and TS. To the right, terminals A and B are shown with Red wire and White wire connections.

2. Data blocks used by the device

2.1. Memory registers

| Variable | Address | |
|--|---------|--------|
| | For PDU | |
| | Dec | Hex |
| Thermostat read temperature from build-in sensor (read only in °C) | 1 | 0x0001 |
| Thermostat read temperature from external sensor (read only in °C) | 2 | 0x0002 |
| Target temperature settings (°C) | 3 | 0x0003 |
| Set low temperature limit value (°C) | 4 | 0x0004 |
| Set high temperature limit value (°C) | 5 | 0x0005 |
| Temperature sensor calibration | 6 | 0x0006 |
| Hysteresis of differential adjuster | 7 | 0x0007 |
| Thermostat read temperature from build-in sensor (read only in °F) | 8 | 0x0008 |
| Thermostat read temperature from external sensor (read only in °F) | 9 | 0x0009 |
| Target temperature settings (°F) | 10 | 0x0010 |
| Dynamic fan speed regulation | 11 | 0x0011 |
| Heating mode | 12 | 0x0012 |
| | | |
| Manual change of output signal value for the fan | 14 | 0x0014 |
| Backlight time | 15 | 0x0015 |
| Turning ON/OFF | 16 | 0x0016 |
| Screen lock | 17 | 0x0017 |
| Anti-freeze mode temperature | 18 | 0x0018 |
| Selection of sensor type | 19 | 0x0019 |
| Time mode | 20 | 0x0020 |
| Time settings (minutes) | 21 | 0x0021 |
| Time settings (houers and days) | 22 | 0x0022 |
| Units selection (°C/°F) | 23 | 0x0023 |
| Temperature sensor status | 24 | 0x0024 |
| Door status | 25 | 0x0025 |
| Set speed for EASYAIR units | 26 | 0x0026 |
| Set heating level for EASYAIR E units | 27 | 0x0027 |
| Set mode of operation for EASYAIR units | 28 | 0x0028 |
| | | |
| Set fan delay shutdown time for EASYAIR units | 29 | 0x0029 |

| | | |
|---|----|--------|
| Set coolspeed for EASYAIR units | 30 | 0x0030 |
| Set first speed value for EASYAIR units | 31 | 0x0031 |
| Set second speed value for EASYAIR units | 32 | 0x0032 |
| Set third speed value for EASYAIR units | 33 | 0x0033 |
| Set value for door optimum function for EASYAIR units | 34 | 0x0034 |
| Set door sensor working logic for EASYAIR units | 35 | 0x0035 |
| Set heating mode | 36 | 0x0036 |
| Set delay door close time | 37 | 0x0037 |

* registers of single record (one message must include a record of only one register)

Tabela 1: Memory register type data block organization.

Caution !!! Recording registers with addresses from 0 to 3 must contain a record of only one variable. For example, to set the rate of MODBUS transmission, the parity mode and device address must send three separate messages. The attempt to record two or three registers at the same time leads to an error message.

Thermostat read temperature from build-in sensor (read only in °C)

–a register containing information on the current temperature of the room in which the device is located. The current temperature is measured for the thermostat built in the controller. The register contains information about temperature in °C.

Thermostat read temperature from external sensor (read only in °C)

–a register containing information on the current temperature of the room in which the device is located. The current temperature is measured for the external temperature sensor. The register contains information about temperature in °C.

Target temperature settings (°C)

– a variable specifying the currently set target temperature. Allowed values for a variable in the range from reg. „Set low temperature limit value” to reg. „Set high temperature limit value (°C)” .

Attempt to record a number beyond the allowable values leads to an error message.

Set low temperature limit value (°C)

– a variable specifying the minimum temperature that can be set in the reg. "Target temperature settings". Allowed values:

- [°C]:
for a variable within a range from 5 to 15.
- [°F]:
for a variable within a range from 41 to 59.

Attempt to record a number beyond the allowable values leads to an error message.

Set high temperature limit value (°C)

– a variable specifying the maximum temperature that can be set in reg. "Target temperature settings". Allowed values:

- [°C]:
for a variable within a range from 16 to 40.
- [°F]:

for a variable within a range from 60 to 104.

Attempt to record a number beyond the allowable values leads to an error message

Temperature sensor calibration

– a register allowing the setting of correction values for temperatures read from a built-in or external sensor NTC10K. Allowed values:

- [°C]:

for a variable within a range 0-36. Values with the step of 0.5. Values corresponding from the range 0-36 as follows: -9°C=>0, -8.5°C=>1...0°C=>18...+9°C=>36

-[°F]:

for a variable within a range 0-29. Values with the step of 1. Values corresponding from the range 0-36 as follows: -14°F=>0,-13°F=>1...+14°F=>29

Hysteresis of differential adjuster

-Register allowing setting the correction value for temperatures read from the in-built NTC10K sensor Allowed values:

- [°C]:

allowed values 0,5;1;2 the corresponding temperature value like: 0,5 = 0,5°C.

- [°F]:

allowed values 1;2;4 the corresponding temperature value like: 1 = 1°F.

Attempt to record a number beyond the allowable values leads to an error message.

Thermostat read temperature from build-in sensor (read only in °F)

– a register containing information on the current temperature of the room in which the device is located. The current temperature is measured for the thermostat built in the controller. The register contains information about temperature in °F.

Thermostat read temperature from external sensor (read only in °F)

– a register containing information on the current temperature of the room in which the device is located. The current temperature is measured for the external temperature sensor. The register contains information about temperature in °F.

Target temperature settings (°F)

– the variable determining the currently set target temperature. Allowed values for a variable within a range from reg. „Set low temperature limit value (°F)” to reg. „Set high temperature limit value (°F)” .

Attempt to record a number beyond the allowable values leads to an error message.

Dynamic fan speed regulation

– a variable that determines the dynamic increase of the fan speed. Allowed values for a variable from 1 to 3 with step of 1.

Attempt to record a number beyond the allowable values leads to an error message.

Heating mode

-variable that allows to set allowable device operating conditions. Acceptable values for the variable:

| Register value | Work mode |
|----------------|---------------------|
| 0 | Heating |
| 1 | Ventilation |
| 2 | Heating+Ventilation |

Manual change of output signal value for the fan

– a variable that allows to set an additional constant value added to the voltage exposed to the analogue output assigned to the fan. Allowable values for the variable fall within the range from 0 to 4 (0.00[V] -4.00[V]) Attempt to record a number beyond the allowable values leads to an error message.

Backlight time

– a variable determining the value of the display backlighting time in the range from 5 to 600 (5[sec.]-600[sec.]). Attempt to record a number beyond the allowable values leads to an error message.

Turning ON/OFF

– an output to turn the device on and off (simulation of pressing the power button). Acceptable values for the variable:

| Register value | Mode |
|----------------|------|
| 0 | OFF |
| 1 | ON |

Screen lock

– a variable that allows you to lock the controller display. Acceptable values for the variable:

| Register value | Mode |
|----------------|--------|
| 0 | Lock |
| 1 | Unlock |

Anti-freeze mode temperature

– a variable specifying the currently set frost protection temperature. Acceptable values for the variable:

| Register value | Temperature |
|----------------|-------------|
| 0 | OFF |
| 1 | 5° |
| 2 | 6° |
| 3 | 7° |
| 4 | 8° |
| 5 | 9° |
| 6 | 10° |

Selection of sensor type

– a variable that allows the choice of thermostat operation between built-in thermostat and external NTC temperature sensor modes. Acceptable values for the variable:

| Register value | Mode |
|----------------|-----------------|
| 0 | Build-in sensor |
| 1 | External sensor |

Time mode

– a variable that allows you to choose the format of the displayed clock between 12-hour and 24-hour formats. Acceptable values for the variable:

| Register value | Clock format |
|----------------|--------------|
| 0 | 24h |
| 1 | 12h |

Time settings (minutes)

– a variable specifying the currently set minutes. Allowed values for a variable between 0 and 59. Attempt to record a number beyond the allowable values leads to an error message.

Time settings (houers and days)

– a variable specifying the currently set time. Allowed values for a variable from 0 to 23. Attempt to record a number beyond the allowable values leads to an error message

Time settings (minutes)

– a variable that allows the choice of an unit between degrees of celsius and degrees of fehrenheit. Acceptable values for the variable:

| Register value | Unit |
|----------------|------------|
| 0 | Celcius |
| 1 | Fahrenheit |

Temperature sensor status

– a binary input to inform about the activity status of the built-in temperature sensor. Acceptable values for the variable:

| Register value | Mode |
|----------------|------------|
| 0 | Active |
| 1 | Non-active |

Door sensor status

– binary input for door sensor activity status. Acceptable values for the variable:

| Register value | Mode |
|----------------|-------------|
| 0 | Door closed |
| 1 | Door open |

Time settings (minutes)

– a variable that determines the currently set fan speed. Acceptable values for the variable

| Register value | Speed |
|----------------|-----------|
| 0 | OFF |
| 1 | Speed I |
| 2 | Speed II |
| 3 | Speed III |

Set heating level for EASYAIR E units

– a variable specifying the currently set heating level for the EASYAIR E units.

Acceptable values for the variable:

| Register value | Level |
|----------------|-----------|
| 0 | OFF |
| 1 | I level |
| 2 | II level |
| 3 | III level |

Set mode of operation for EASYAIR units

– a variable specifying the currently set operating mode for EASYAIR units. Acceptable values for the variable:

| Register value | Mode |
|----------------|----------------|
| 0 | Door mode |
| 1 | Room mode |
| 2 | Door+room mode |

Set fan delay shutdown time for EASYAIR units

– a variable specifying the currently set time, given in seconds, of the fan shutdown delay.

Allowed values for a variable from 30 to 200. Attempt to record a number beyond the allowable values leads to an error message.

Set coolspeed for EASYAIR units

– a variable that determines the currently set value of the fan speed during shutdown.

Allowed values for a variable from 45 to 100. The numerical values correspond to a percentage of the full speed, e.g. 45 = 45% of the maximum speed. Attempt to record a number beyond the allowable values leads to an error message

Set first speed value for EASYAIR units

– a variable specifying the currently set fan speed value assigned to the first gear. Allowed values for a variable between 15 and 80. The numerical values correspond to a percentage of the full speed, e.g. 45 = 45% of the maximum speed. Attempt to record a number beyond the allowable values leads to an error message.

Set second speed value for EASYAIR units

– a variable specifying the currently set value of the fan speed assigned to the second gear.

Allowed values for a variable from 15 to 90. The numerical values correspond to a percentage of the full speed, e.g. 45 = 45% of the maximum speed. Attempt to record a number beyond the allowable values leads to an error message

Set third speed value for EASYAIR units

– a variable specifying the currently set fan speed value assigned to the third gear. Allowed values for a variable from 15 to 100. The numerical values correspond to a percentage of the full speed, e.g. 45 = 45% of the maximum speed. Attempt to record a number beyond the allowable values leads to an error message.

Set value for door optimum function for EASYAIR units

– a variable specifying how many gears the fan capacity will be increased when the door is opened. Allowed values for a variable from 0 to 3. Attempt to record a number beyond the allowable values leads to an error message.

Set door sensor working logic for EASYAIR units

– a variable that defines the logic of the door sensor. You can choose between NO (normally open) and NC (normally closed). Allowed values according to the table below. Attempt to record a number beyond the allowable values leads to an error message.

| Register value | Mode |
|----------------|------|
| 0 | NO |
| 1 | NC |

Set heating mode

– a variable for setting the permitted operating modes of the devices. Allowed values according to the table below.

| Register value | Mode |
|----------------|-------------|
| 0 | Heating |
| 1 | Ventilation |
| 2 | |

Set delay door close time

– a variable specifying the currently set time, given in seconds, of the delay for switching off the heating when the door is closed. Allowed values for the variable from 0 to 90. Attempt to record a number beyond the allowable values leads to an error message.