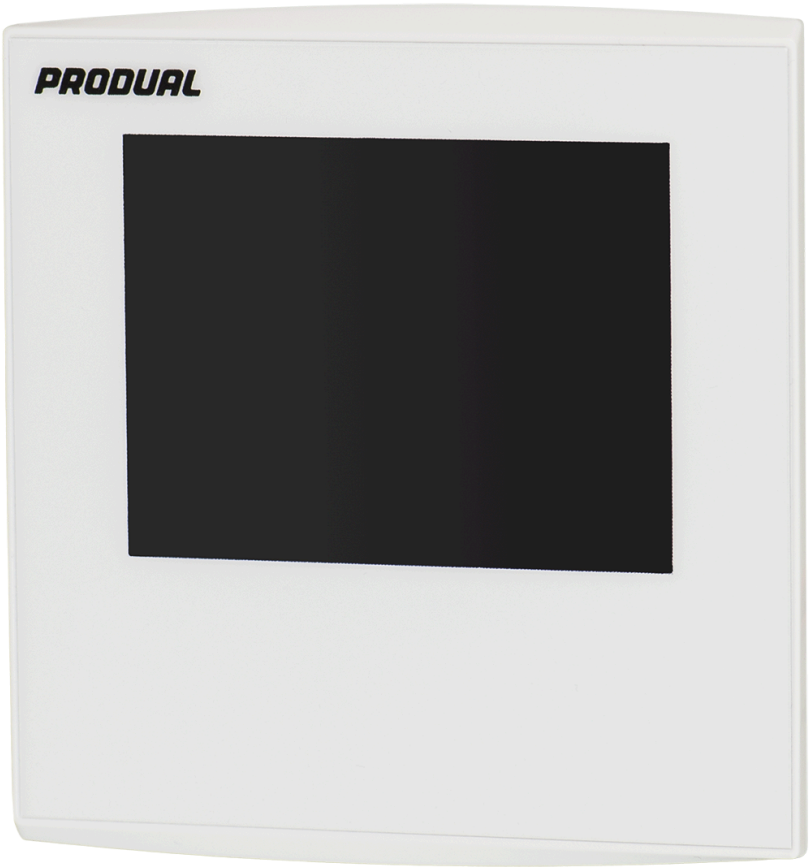
akribis

USER GUIDE

ROU-S

Produal

Distributed by AKRIBIS



This user guide is for devices with the software version 1.2.0 or newer.

Common commissioning and maintenance instructions

MOUNTING

The device can be installed in dry surroundings (IP20) by screws on the wall surface (ROU-S) or on the standard flush mounting box (ROU-F). The recommended installation height is 150…180 cm.

The device position should be selected carefully. All the error factors that can affect to the measurements should be eliminated as well as possible. The following list defines the typical measurement error factors.

- direct sun light
- occupant proximity
- air flow coming from windows or doors
- air flow coming from ventilation nozzles
- air flow coming from the flush mounting box
- differential temperature caused by external wall

CLEANING

Mild household detergents may be used with a soft rag. Never use aggressive or abrasive cleaning agents or glass window cleaners.

Using ROU with C221/C222 controller

COMPATIBILITY

To be able to use ROU with C221/C222 controllers, the controller software version must be compatible with ROU. See the following table for the compatible versions.

IMPORTANT: Change the *Protocol* from MODBUS to ZONEBUS in the settings page 3.

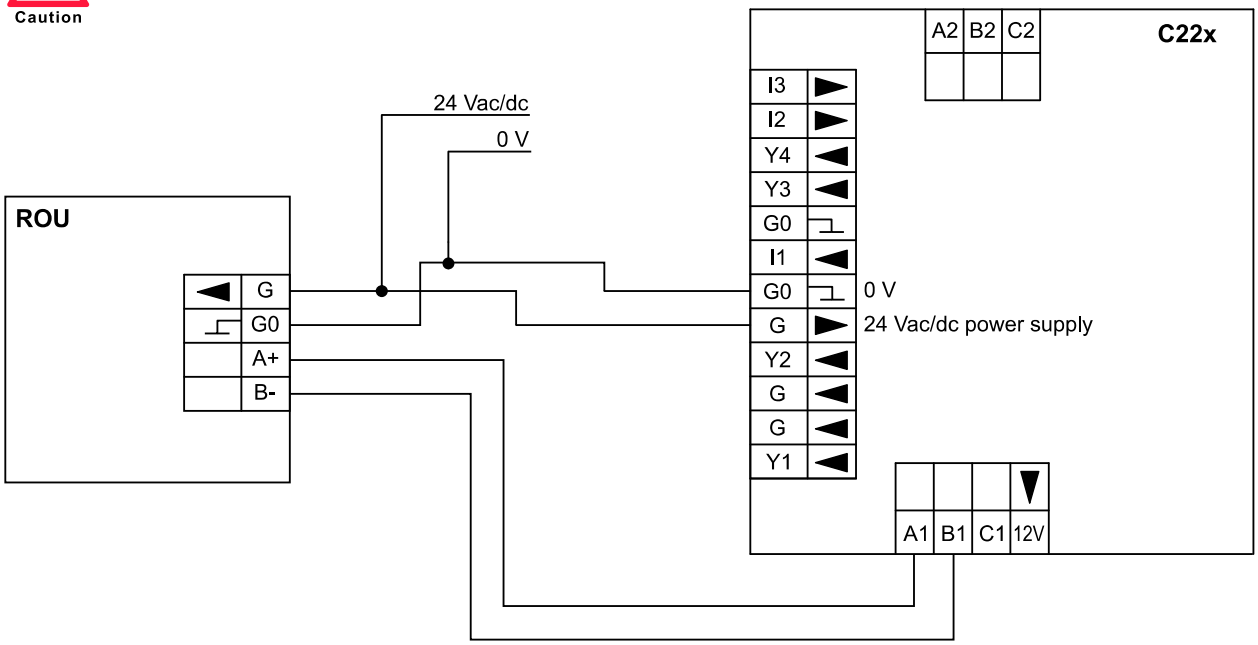
ROU version	ZONEBUS compatible C221/C222 versions	Notes
1.0.0	< v2.2	Humidity measurement is not possible.
	≥ v2.2	

Information is subject to change without prior notice.

WIRING

Caution

Device wiring and commissioning can only be carried out by qualified professionals. Always make the wirings while the power is switched off.



Using the operating unit menu

ENTERING THE OPERATING UNIT MENU

1. Touch the button for 5 seconds.
2. Input the operating panel pin code.

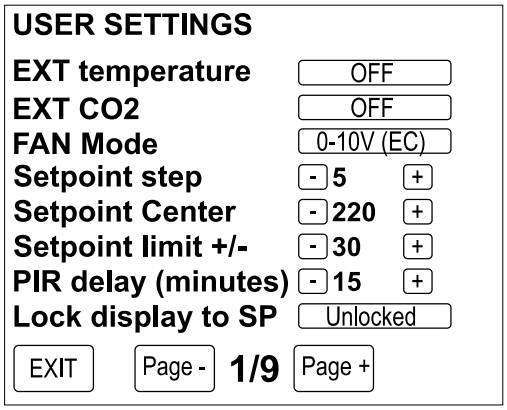
   The default pin code is 395.
3. Make the settings required by the process.
4. Touch the EXIT button or wait for 30 seconds.

   The operating unit returns to normal operation.

Information is subject to change without prior notice.

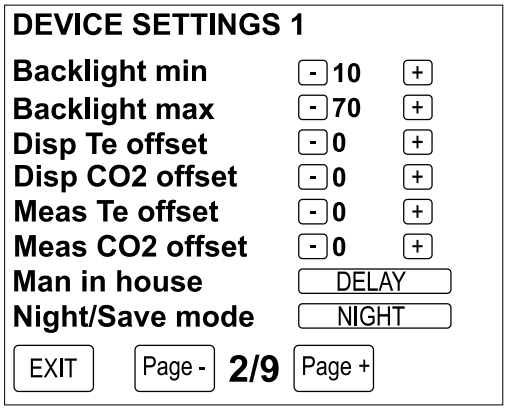
OPERATING UNIT MENU

Page 1



Parameter	Description
EXT temperature	External temperature measurement (ON/OFF). In ZONEBUS devices the external temperature sensor is detected automatically.
EXT CO2	External CO_2 measurement (ON/OFF).
FAN Mode	Fan control mode (0-10V (EC) / Relay).
Setpoint step	User set point deviation increment step. 1 = 0,1 °C, 2 = 0,2 °C, 3 = 0,3 °C, 5 = 0,5 °C
Setpoint Center	User set point centre (18…26 °C).
Setpoint limit +/-	User set point deviation range (1…16 °C).
PIR delay (minutes)	Duration of the temporary day mode (5 / 15 / 30 / 60 / 90 /120 minutes).
Lock display to SP	Show only the temperature set point on the display (ON/OFF).

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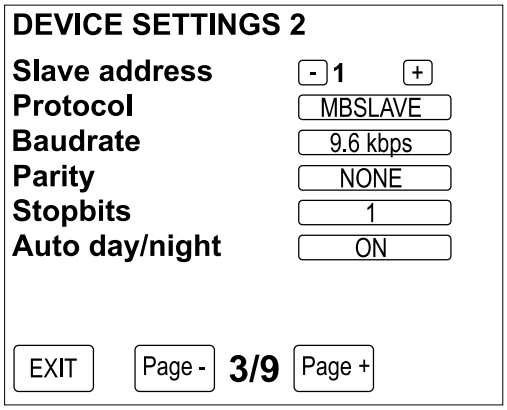


Parameter	Description
Backlight min	Backlight level when the screensaver is active.
Backlight max	Backlight level when the screensaver is not active.
Disp Te offset	Temperature offset for the value on the display.
Disp CO2 offset	CO_2 offset for the value on the display.
Meas Te offset	Temperature measurement tuning.
Meas CO2 offset	CO_2 measurement tuning.

Information is subject to change without prior notice.

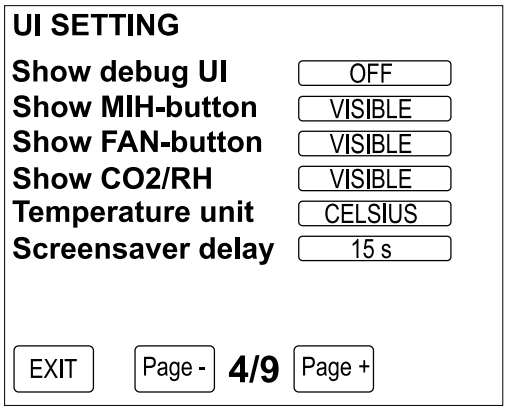
Parameter	Description
Man in house	Man in house button function (DELAY / ON/OFF). DELAY = When the man in house button is pressed, the day mode is on according to *PIR delay (h)* time. ON/OFF = When the man in house button is pressed, the day mode is on until the button is pressed again.
Night/Save mode	Night or Save mode selection.

Page 3



Parameter	Description
Slave address	C22x slave address (1…247).
Protocol	Protocol that is used for communicating with the controller (MODBUS MASTER / MODBUS SLAVE / ZONEBUS). **NOTE:** Select ZONEBUS when using ROU with C22x controllers.
Baudrate	Modbus speed (9.6 kbps / 19.2 kbps / 38.4 kbps / 57.6 kbps).
Parity	Parity (NONE / EVEN / ODD).
Stopbits	Number of stop bits (1 / 2).

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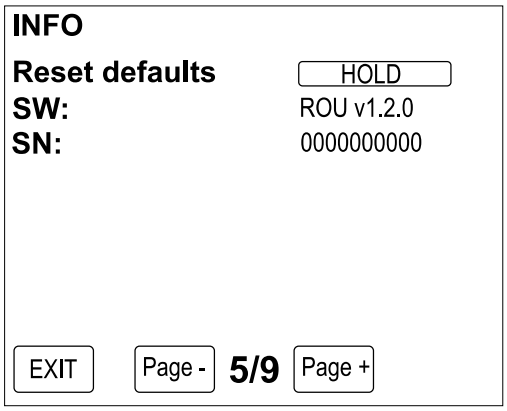


Parameter	Description
Show debug UI	Enable debugging view (OFF / VISIBLE). The input register values are shown on the display.
Show MIH-button	Select the visibility of the man in house button (OFF / VISIBLE).
Show FAN-button	Select the visibility of the fan speed button (OFF / VISIBLE).
Show CO2/RH	Select the visibility of CO_2/humidity measurement (OFF / VISIBLE).
Temperature unit	Temperature measurement unit (CELSIUS / FAHRENHEIT)

Information is subject to change without prior notice.

Parameter	Description
Screensaver delay	Screensaver delay (15 s / 30 s / 1 min / 2 min / 5 min / 10 min / 30 min)

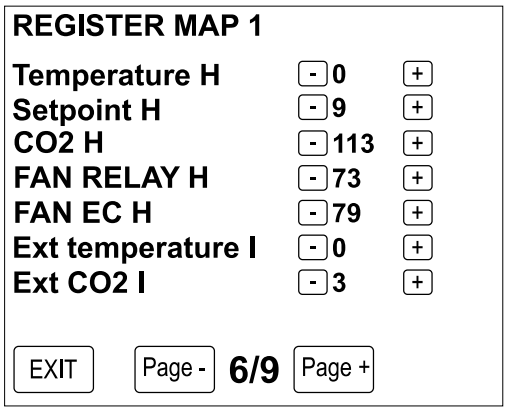
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Parameter	Description
Reset defaults	Return the operating unit to factory settings. Press and hold the button for 5 seconds to reset the device.
SW:	Operating unit software version.
SN:	Device serial number.

Page 6 (not applicable in ZONEBUS devices)

NOTE: The letter H refers to holding registers and the letter I to input registers.



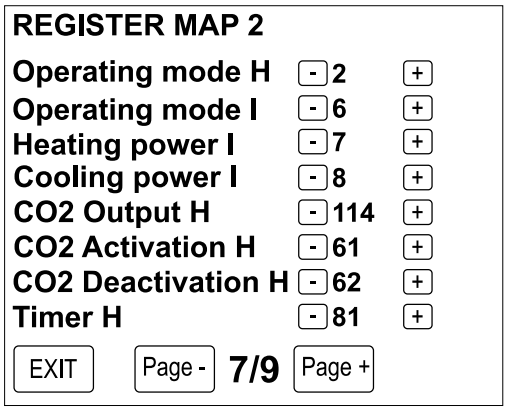
Parameter	Description	Data value	Data range
Temperature H	Temperature measurement register. ROU writes the measured temperature value to selected register. 0 = 40001	0...600	0...60,0 °C
Setpoint H	Set point register. ROU writes the set point value to the selected address when the set point is modified and reads the set point value from the register. 9 = 40010	20...420	2,0...42,0 °C
CO2 H	CO_2 measurement register. ROU writes the measured CO_2 value to selected address. 113 = 40114. Not supported by current versions of C22x.	0...2000	0...2000 ppm
FAN RELAY H	Fan speed register for 3-speed fan. Rou writes the user selected fan speed to the selected register when the fan speed is modified. 73 = 40074	0...4	0 = off 1 = low 2 = middle 3 = high 4 = automatic

Information is subject to change without prior notice.

Parameter	Description	Data value	Data range
FAN EC H	EC fan speed register. Rou writes the user selected fan speed to the selected register when the fan speed is modified. 79 = 40080	0...4	0 = off 1 = low 2 = middle 3 = high 4 = automatic
Ext temperature I	External temperature measurement register. ROU reads the temperature value from the selected register and shows it on the display. 0 = 30001	0...500	0...50,0 °C
Ext CO2 I	External CO_2 measurement register. ROU reads the CO_2 value from the selected register and shows it on the display. 3 = 30004	0...2000	0...2000 ppm

Page 7 (not applicable in ZONEBUS devices)

NOTE: The letter H refers to holding registers and the letter I to input registers.

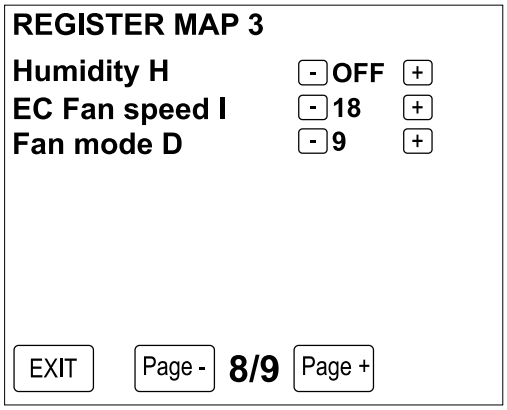


Parameter	Description	Data value	Data range
Operating mode H	Operating mode register. Rou writes the selected (via PIR or Man in house button) operating mode to the selected register. 2 = 40003	1...3	DAY - NIGHT - SAVE
Operating mode I	Current operating mode. ROU reads the operating mode from the selected register and shows the corresponding symbol (sun-moon-leaf) on the display. 6 = 30007	1...3	DAY - NIGHT - SAVE
Heating power I	Heating power register. ROU reads the heating power from the selected register. If the value is ≥ 1, the heating symbol is shown on the display. 7 = 30008	0...100	0...100 %
Cooling power I	Cooling power register. ROU reads the cooling power from the selected register. If the value is ≥ 1, the cooling symbol is shown on the display. 8 = 30009	0...100	0...100 %
CO2 Output H	CO_2 output register. ROU writes the selected CO_2 output to the selected register. 114 = 40115. Not supported by current versions of C22x.	0...5	0...100 %
CO2 Activation H	CO_2 activation value register. ROU writes the selected CO_2 activation value to the selected register. 61 = 40062	0...100	0...100 %
CO2 Deactivation H	CO_2 deactivation value register. ROU writes the selected CO_2 deactivation value to the selected register. 62 = 40063	0...100	0...100 %
Timer H	Timer value register. ROU writes the selected timer value to the selected register. 81 = 40082	0...255	0...255 h

Information is subject to change without prior notice.

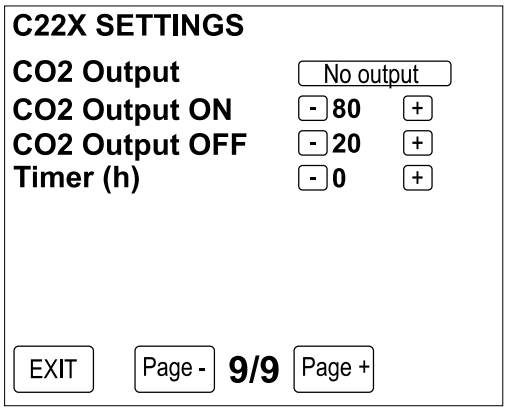
Page 8 (not applicable in ZONEBUS devices)

NOTE: The letter H refers to holding registers and the letter I to input registers.



Parameter	Description	Data value	Data range
Humidity H	Humidity measurement register. ROU writes the measured humidity value to selected register.	0...1000	0...100,0 %
EC Fan speed I	Actual EC fan speed register. ROU reads the EC fan speed from the selected register and shows the corresponding speed on the fan speed button. 18 = 30019	0...100	0...100 %
FAN Mode D	Actual fan mode register. ROU reads the fan mode from the selected register and shows the corresponding mode on the fan speed button. 9 = 10010	0...1	0...1

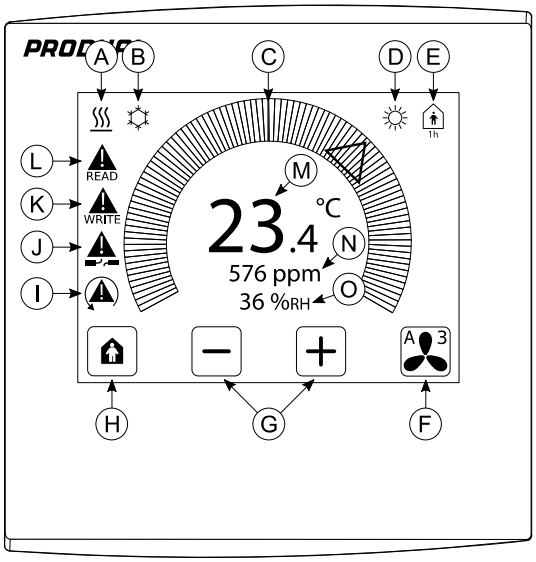
Page 9

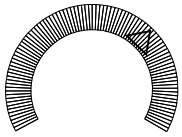


Parameter	Description
CO2 Output	CO_2 output connector on the slave device (No output / D1 / D2 / A1 / A2(ON/OFF) / A1 continuous). Not supported by current versions of C22x.
CO2 Output ON	CO_2 output activation value on C22x slave device (0...100 %).
CO2 Output OFF	CO_2 output deactivation value on C22x slave device (0...100 %).
Timer (h)	Timer value on the C22x slave device (0…255 h).

Information is subject to change without prior notice.

OPERATING UNIT SYMBOLS AND BUTTONS



A		Heating symbol is illuminated when heating is active.
B		Cooling symbol is illuminated when cooling is active.
C		Temperature arc shows the current set point.
D		Day mode symbol is illuminated when the controller is in day mode.
		Night mode symbol is illuminated when the controller is in night mode.
		Save mode symbol is illuminated when the controller is in save mode.
E	1h	The man in house symbol is illuminated when the day mode extension is active. The extension duration is shown below the symbol.
F	M 3	Fan speed button. The fan control mode is displayed on the top left corner (M = manual, A = automatic). The actual fan speed is displayed on the top right corner.
G		Temperature set point adjustment buttons.
H		Man in house button.
I		Temperature sensor error symbol is illuminated when the temperature sensor is defective.
J		Connection error symbol is illuminated when the connection to controller is lost.
K	WRITE	Write error symbol is illuminated when ROU can't write a value to the controller.
L	READ	Read error symbol is illuminated when ROU can't read a value from the controller.
M	23.4 °C	Current temperature value or set point.
N	576 ppm	Carbon dioxide value.
O	36 %RH	Humidity value.

Information is subject to change without prior notice.

MODBUS

Bus properties

Protocol	RS-485 Modbus RTU
Bus speed	9600/19200/38400/57600 bit/s
Data bits	8
Parity	none/odd/even
Stop bits	1/2
Network size	up to 247 devices per segment

NOTE: The device can work as a master or a slave in Modbus network.

Modbus registers

NOTE: If you try to write a parameter value that is beyond the parameter value range, the value will be replaced by the nearest acceptable value.

Example:

1. The register value range is -500…500.
2. You try to write the value 600 to the register.

   -> the value 500 is written to the register.

NOTE: The controls marked with * are stored in the volatile memory. These controls are returned to factory defaults after a power failure.

NOTE: The parameter memory durability allows at least 100 000 writing cycles.

Coils

Register	Parameter description	Data Type	Values	Range	Default
1	Read temperature value from Modbus	Bit	0 - 1	0 = Off, 1 = On	0
2	Read CO_2 value from Modbus	Bit	0 - 1	0 = Off, 1 = On	0
3	Show fan button	Bit	0 - 1	0 = Off, 1 = On	1
4	Show “man in house” button	Bit	0 - 1	0 = Off, 1 = On	1
5	Show CO_2/humidity value	Bit	0 - 1	0 = Off, 1 = On	1
6	Lock display to show set point	Bit	0 - 1	0 = unlocked 1 = locked	0
7	Temperature unit on display	Bit	0 - 1	0 = Celsius 1 = Fahrenheit	0
8	Fan mode	Bit	0 - 1	0 = Off, 1 = On	0
9	Man in house button function	Bit	0 - 1	0 = delay 1 = on/off	0
10	*Man in house active	Bit	0 - 1	0 = Off, 1 = On	0
11	Automatic day mode	Bit	0 - 1	0 = Off, 1 = On	1
12	Night/save mode	Bit	0 - 1	0 = Off, 1 = On	0
13	*Show cooling icon	Bit	0 - 1	0 = Off, 1 = On	0
14	*Show heating icon	Bit	0 - 1	0 = Off, 1 = On	0

Discrete inputs

Register	Parameter description	Data Type	Values	Range
1000**1**	Man In house (PIR or button) active	Bit	0 - 1	0 = Off, 1 = On
1000**2**	Fan is in automatic mode	Bit	0 - 1	0 = Off, 1 = On

Information is subject to change without prior notice.

Input registers

Register	Parameter description	Data Type	Values	Range
3000**1**	Measured temperature	Unsigned 16	0...600	0…60,0 °C
3000**2**	Controlling setpoint	Unsigned 16	20...420	2…42 °C
3000**3**	User fan speed	Unsigned 16	0 - 1 - 2 - 3 - 4	0 = OFF 1 = speed 1 2 = speed 2 3 = speed 3 4 = automatic
3000**4**	Current operation mode	Signed 16	0 - 1 - 2 - 3	0 = OFF 1 = day 2 = night 3 = eco
3000**5**	Measured CO_2 value	Signed 16	0...2000	0…2000 ppm
3000**6**	Measured humidity value	Signed 16	0...1000	0…100,0 %
3000**7**	Remaining time PIR or MIH off delay	Signed 16	0...600	0…60 min

Holding registers

Register	Parameter description	Data Type	Value	Range	Default
4000**1**	Set point from Modbus	Signed 16	20...420	2…42 °C	220
4000**2**	Setpoint Center °C	Signed 16	18...26	18…26 °C	21
4000**3**	Setpoint limit +/- °C	Signed 16	1...16	1…16 °C	3
4000**4**	Setpoint step	Signed 16	1...5	0,1…0,5 °C	5
4000**5**	*Overwrite user fan speed	Signed 16	0 - 1 - 2 - 3 - 4	0 = OFF 1 = speed 1 2 = speed 2 3 = speed 3 4 = automatic	4
4000**6**	*Current fan speed	Signed 16	0...100	0…100 %	0
4000**7**	*Current operation mode	Signed 16	0 - 1 - 2 - 3	0 = OFF 1 = day 2 = night 3 = eco	0
4000**8**	*External temperature measurement	Signed 16	0...600	0…60,0 C	230
4000**9**	*External CO_2 measurement	Signed 16	0...2000	0…2000 ppm	400
400**10**	Screen saver delay	Signed 16	0 - 1 - 2 - 3 - 4 - 5 - 6	0 = 15 s 1 = 30 s 2 = 1 min 3 = 2 min 4 = 5 min 5 = 10 min 6 = 30 min	0
400**11**	Backlight min	Signed 16	0...50	0…50 %	10
400**12**	Backlight max	Signed 16	30...100	30...100 %	70
400**13**	MIH timer	Signed 16	0 - 1 - 2 - 3 - 4 - 5	0 = 5 min 1 = 15 min 2 = 30 min 3 = 60 min 4 = 90 min 5 = 120 min	1
400**14**	Temperature measurement offset	Signed 16	-30...30	-3,0…3,0 °C	0
400**15**	CO_2 measurement offset	Signed 16	-100...100	-100...100 ppm	0
400**16**	Temperature display offset	Signed 16	-30...30	-3,0…3,0 °C	0
400**17**	CO_2 display offset	Signed 16	-100...100	-100...100 ppm	0

Information is subject to change without prior notice.