Room units and controllers

Communication protocol description

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Contents

General

- All room units and controllers support Modbus RTU, default is **9600 bps, No parity, 8 bits, 1 stopbit**.
- Units are slaves (servers); each unit has a slave address (1 to 250) and responds to the requests from a master (client). **Default Modbus slave address is 1**.
- The address space can be accessed bitwise or wordwise (i.e. it is possible to read out eg. from register 0005h the complete word or individual bits). The bits (functions 01, and 15) are addressed from the beginning, thus bit 0 at register 0 is read 0000, bit 0 at address 0001 is read at address 0010h, which is 16dec).
- Some registers are read-only, some are read/write to RAM, and several values are written to EEPROM. Please note that the EEPROM write process may be protected against frequent overwriting by an enable bit (eg. at FC010, register 24, Set fan mode). This bit is always read as 0.
- Supportes Modbus functions are:
    - **01 Read Coil Status** –read bits
    - **03 Read Holding Registers** – read words
    - **15 Force Multiple Coils** – write bits
    - **16 Force Multiple Registers** – write words.

NB. Usually, Modbus clients use shifted numbering, and 1 must be added to the address number to get the register number, see example below. Therefore clients with port monitor functionality are strongly recommended for testing.

Example for UI010:

Request (to UI010)

```
01     slave address
03     Modbus function 03 - Read multiple registers
00 10  starting address - 16 dec to read register 17, room temp.
00 01  number of registers to read
85 CF  CRC
```

Response (from UI010)

```
01     slave address
03     Modbus function 03 - Read multiple registers
02     number of bytes to follow
07 9E  value: 1950 dec = 19.5 °C
3B DC  CRC
```

To check communication and set up the units, use *domat.exe*, a free utility for addressing, communication tests etc. Its Address editor function may be very useful when debugging. Available for download at **www.rcware.eu**.

UIxxx – room unit, UXxxx - room unit with blinds control
- 50 words can be read or written at one request (i.e. 100 bytes)
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)
- not all units support all functions (eg. humidity) – refer to the respective data sheets

This table only applies for the new LCD display version – firmware version >100! Contact technical support for the old display (firmware version <100) register table.

name	address	type	description / defaults	notes
module ID	1 LSB 1 MSB	R	module type identification **UI5xx:** UI 511 -> 0601hex UI 512 -> 0602hex UI 520 -> 0620hex UI 541 -> 0641hex UI 542 -> 0642hex UI 545 -> 0645hex UI 551 -> 0651hex UI 552 -> 0652hex UI 555 -> 0655hex UI 561 -> 0661hex UI 562 -> 0662hex UI 565 -> 0665hex UI 571 -> 0671hex UI 572 -> 0672hex UI 575 -> 0675hex UI 581 -> 0681hex UI 582 -> 0682hex UI 585 -> 0685hex UI 590 -> 0690hex **UI6xx:** UI 611 -> 0701hex UI 612 -> 0702hex UI 620 -> 0720hex UI 641 -> 0741hex UI 642 -> 0742hex UI 645 -> 0745hex UI 651 -> 0751hex UI 652 -> 0752hex UI 655 -> 0755hex UI 661 -> 0761hex UI 662 -> 0762hex UI 665 -> 0765hex UI 671 -> 0771hex UI 672 -> 0772hex UI 675 -> 0775hex UI 681 -> 0781hex UI 682 -> 0782hex UI 685 -> 0785hex UI 690 -> 0790hex	**UI0xx:** UI 010 -> 0200hex UI 011 -> 0201hex UI 012 -> 0202hex UI 020 -> 0220hex UI 041 -> 0241hex UI 042 -> 0242hex UI 045 -> 0245hex UI 051 -> 0251hex UI 052 -> 0252hex UI 055 -> 0255hex UI 061 -> 0261hex UI 062 -> 0262hex UI 065 -> 0265hex UI 071 -> 0271hex UI 072 -> 0272hex UI 075 -> 0275hex UI 081 -> 0281hex UI 082 -> 0282hex UI 085 -> 0285hex **UI09x:** UI 091 -> 0291hex UI 092 -> 0292hex UI 093 -> 0293hex UI 094 -> 0294hex UI 095 -> 0295hex **UX0xx:** UX 011 -> 1201hex UX 015 -> 1220hex UX 041 -> 1241hex UX 045 -> 1245hex

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firmware	2 LSB 2 MSB	R	firmware version	89hex
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 1** – SW reset enabled **bit 4** – init EEPROM **bit 5** – central write block (all RW registers)	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB) **SW reset** is set by writing to register **SW reset** (address 1002)

status MSB	3 MSB	R	module status upper byte
			bit 0 0 normal mode
			         1 init mode
			bit 1 1 at the next EEPROM write attempt will all data be written to EEPROM
			         0 at the next EEPROM write attempt will received data be written to RAM only
			bit 2 – 1 – EEPROM initialized
			bit 3 – central write block indication
			bit 4 – edit state indication
			bit 5 - 1
			bit 6 - 0
			bit 7 – 1
				bit 3 – indication of central write block which is set by setting of bit 5 in reg. 3 (status LSB)
				bit 4 – indication of editing mode: 1 while user operates the knob, all write attempts over the bus are ignored (the same function as *central write block*)
				(register 23 bit 4)

Registers 4...6 for UX... and UI0... (RS485)				
address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	**!!!** the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	**!!!** the change will be effective after restart only (however the register will be set immediately)
serial port settings	5 LSB	R,W EEPROM	serial port communication parameters (default = no parity, one stop bit: 0x00)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) **!!!** the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	

Register 6 for UI09x (units with CO2 sensor)				
hysteresis	6 LSB	R,W EEPROM	hysteresis for the CO2-, thermo- and hygrostat function. See register 6 MSB for controller function. The setpoints are in the **set temp**, **set rh**, or **set CO2** registers (200ppm, 20%, 2,0K, 0x14)	value for: CO2-stat in 10ppm, thermostat in 0,1K, hygrostat in 1%
DO1 settings	6 MSB	R,W EEPROM	DO function: the output is active if the selected actual value is higher than setpoint (Modbus, 0x00)	bits 0-1 ... output controlled by (00 - Modbus, 01 - CO2-stat, 10 - thermostat, 11 - hygrostat)
Register 6 for UX0.. and UI0.. (except for UI09x)				
up button short pushes	6 LSB	R	number of short pushes for the „up" button, after reaching the max value the register resets, only UX...	
up button long pushes	6 MSB	R	number of long pushes for the „up" button, after reaching the max value the register resets, only UX...	
Registers 4...6 for UI5... and UI6... (Ethernet)				
uptime	4 LSB 4 MSB 5 LSB 5 MSB	R	uptime (s)	
firmware 2	6 LSB 6 MSB	R	Ethernet processor firmware version	
Common registers for all UI...				
relay	7 LSB	R, W RAM	relay outputs on/off (DO1-DO2)	bit 0 ... DO 1 bit 1 ... DO 2 (UX_0xx: - read-only - blinds up) bit 2 ... DO 3 (only UX_0xx: – read-only – blinds down)
latch enable	7 MSB	R, W RAM	latch enable function for individual inputs: by writing **1** into the register the particular bit in the **latched value** register goes to 0 and is kept until the required value is catched. After reset, the whole register is set to 0.	Resetting of the individual catched bits in the **latched value register**: change the particular bit from log. 0 to log.1 (disable and enable the latch function for individual bits)
time programme output	8 LSB 8 MSB	R	time scheduler output (the output value depends on the time schedule type, see the **settings** register	1) multistate scheduler: 0x01, 0x02, 0x04 (presence / day/night mode) 2) analogue scheduler: directly the value saved in the time schedule registers
EEPROM writes	9 LSB 9 MSB	R, EEPROM	number of EEPROM writing cycles; this register is not reset with INIT procedure, and does not overflow.	

inputs	10 LSB	R	readout of digital inputs (DI1, DI2, PUSH)	bit 0 ... DI 1 bit 1 ... DI 2 bit 2 ... PUSH button
latched values	10 MSB	R	catched values **0 –** since latch enable there was **no change** on the bit **1 -** since latch enable the bit value **has changed** its state	bit 0 ... DI 1 bit 1 ... DI 2 bit 2 ... PUSH button; to reset the bits, disable and enable latch - see **latch enable**
set temp	11 LSB 11 MSB	R,W EEPROM	temperature set by user (UI09x temperature setpoint value for thermostat function) e.g. 21.5°C reads 2150 (default = 23 °C; 0x08FC)	recalculate: set temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day /comfort temp	12 LSB 12 MSB	R,W EEPROM	day mode temperature setpoint set by user (when editing, the symbols *thermometer* and *sun* are active) (default = 23 °C; 0x08FC)	recalculate: set temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night / precomfort temp	13 LSB 13 MSB	R,W EEPROM	night mode temperature setpoint set by user (when editing, the symbols *thermometer* and *moon* are active) (default = 18 °C, 0x0708)	recalculate: set temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set outside /depression temp	14 LSB 14 MSB	R,W EEPROM	set outside temperature (at which heating may be enabled), step and resolution is fixed to 1 °C (when editing, the symbols *thermometer* and *house* are active) (default = 15 °C, 0x05DC)	recalculate: set temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set DHW temp	15 LSB 15 MSB	R,W EEPROM	DHW setpoint temperature, step and resolution is fixed to 1 °C (when editing, the symbols *thermometer* and *water tap* are active) (default = 50 °C, 0x1388)	recalculate: set temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set heating curve	16 LSB	R,W EEPROM	heating curve type set by user (when editing, the symbols *heating* and *boiler* are active) (default = 1)	set value = 1 .. 4
	16 MSB		reserved	

actual temp	17 LSB 17 MSB	R	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set rh	18 LSB 18 MSB	R,W EEPROM	relative humidity set by user (UI09x humidity setpoint value for hygrostat function) (default = 40 %, 0x0FA0)	recalculate: humidity = read value / 100 0 … 0 100.00 … 10000
actual rh	19 LSB 19 MSB	R	actual relative humidity measured by the internal sensor, incl. correction (see **corr rh sensor**) (only for types containing humidity sensor)	recalculate: humidity = read value / 100 0 … 0 100.00 … 10000
set presence mode	20 LSB	R,W EEPROM	presence mode set by user (for hotels) The register is to be set by 16 bit writing command. The time program has 3 states: Comfort, Standby, Off. Its output is in the **time programme output** register. When the Presence time program type is defined, required states should be enabled in the register **presence mode edit mask** (67 LSB). (default = 0x00)	bit 0 … comfort (occupied house) bit 1 … standby (empty house) bit 2 … off (Off) bit 3 … party (occupied house + drink) bit 4 ... auto (clock), time schedule (if enabled) bit 5 ... holiday (clock + empty house) bit 6 ... reserved bit 7 ... **disable writing** (0 – value will be written to EEPROM, 1 – writing disabled.)
set day/night mode	20 MSB	R,W EEPROM	day/night mode set by user (for residential applications) The register is to be set by 16 bit writing command. The time program has 3 states: Day auto, Night auto, Off. Its output is in the **time programme output** register. When the Day/Night time program type is defined, required states should be enabled in the register **Day/Night mode edit mask** (67 LSB). (default = 0x00)	bit 0 … day auto (clock, sun) bit 1 … night auto (clock, moon) bit 2 … day manual (sun) bit 3 … night manual (moon) bit 4 ... off (Off) bit 5 ... auto (clock), time schedule (if enabled) bit 6 ... holiday (clock + house) bit 7 ... **disable writing** (0 – value will be written to EEPROM, 1 – writing disabled.)

set fan mode	21 LSB	R,W EEPROM	fan mode set by user (for fancoils, convectors, AHUs) The register is to be set by 16 bit writing command. (default = 0x00)	bit 0 … Auto (fan + A) bit 1 … Man Off (fan + M) bit 2 … Man 1 (fan + M + Stage 1) bit 3 … Man 2 (fan + M + Stage 1,2) bit 4 ... Man 3 (fan + M + Stage 1,2,3) bit 5 to 6 … reserved bit 7 ... **disable writing** (0 – value will be written to EEPROM, 1 – writing disabled.)
set heat/cool mode	21 MSB	R,W EEPROM	heat/cool mode set by user (for split units, heat pumps etc.) The **disable writing** bit may be used to write selectively (only when the presence mode value changes) as EEPROM is not suitable for permanent writing. This bit is not written to the register. The register is to be set by 16 bit writing command.	bit 0 … off (Off) bit 1 … heat only (Heat) bit 2 … cool only (Cool) bit 3 … fan only (Fan) bit 4 ... auto (Heat + Cool) bit 5 to 6 … reserved bit 7 ... **disable writing** (0 – value will be written to EEPROM, 1 – writing disabled.)
set user pattern mode	22 LSB	R,W EEPROM	state of user defined mode (for each mode, the complete symbol set may be redefined) – see **user pattern x symbols x**, writing must follow by a 16-bit command	bit 0 ... user_1_pattern bit 1 ... user_2_pattern bit 2 ... user_3_pattern bit 3 ... user_4_pattern bit 4 ... user_5_pattern bit 5...6 reserved bit 7 ... **disable writing** (0 – value will be written to EEPROM, 1 – writing disabled.)
write protect delay	22 MSB	R, W, EEPROM	write protect time in seconds after user knob operation (default = 10 s, 0x0A) (This protection time prevents the PLC from overriding the values set manually by the knob.)	0 = off

settings	23 LSB 23 MSB	R,W EEPROM	Modbus frame part receiving: end of frame is given either by the timeout since last character (see **mb timeout**), i.e. only part of the frame may be received, or the complete received frame (checked during receiving). knob steps: number of steps to invoke value change by the defined step (default: °C, part receiving off, password protection off, CO2 in %, presence time programme, autocalibration on, 2 steps, 1 step, 0x1250)	bit 0 ... (0 – temperature display in °C, 1 – in °F; applies to LCD display only, communication is always in °C) bit 1... Modbus frame part receiving (change applies after restart) : 0- off, 1- on bit 2-3 ... time schedule type (0 - off, 1 - presence, 2 - day-night, 3 - analogue) bit 4 ... write protection (0 - off, 1 - on) bit 5 ... CO2 unit display: 0 - %, 1 - ppm bit 6 – autocalibration for CO2 sensors bit 7 ... reserved bit 8-11 ... knob steps in short edit mode bit 12-15 ... knob steps in long edit mode
latch state	24 LSB	R,W EEPROM	state to be catched **0** – log. 0 (default) **1** – log. 1	bit 0 ... DI 1 bit 1 ... DI 2 bit 2 ... PUSH button (fixed to 1 – push of the button)
relay comm	24 MSB	R,W EEPROM	**0** – no state change on communication failure (default) **1** – on communication failure (see **comm timeout**) the output value will be set to **relay commfail state** (default = 0)	bit 0 ... DO 1 bit 1 ... DO 2
relay commfail state	25 LSB	R,W EEPROM	on commfail timeout and **relay comm** set to 1 the outputs are set to **relay commfail state** (default = 0)	bit 0 ... DO 1 bit 1 ... DO 2
comm timeout	25 MSB	R,W EEPROM	time [secs] of non-communication which is recognized as communication failure (default = 0). On comfail, outputs go to predefined states (see **relay comm**) and alarm bell symbol is activated on the display.	if the value is set to 0, no comm fail function is implemented
output power up enable	26 LSB	R,W EEPROM	startup function enable **0** – no setting of outputs after power up until first communication **1** – the outputs go to the **output start** values after power up until the first **outputs** command is received (default = 0)	bit 0 ... DO 1 bit 1 ... DO 2 May be used for commissioning.
output start	26 MSB	R,W EEPROM	output status at power up, only active if **output power up enable** (default = 0)	bit 0 ... DO 1 bit 1 ... DO 2

min temp	27 LSB 27 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for temp, day and night -199.99 to 199.99 (default = 18°C, 0x0708)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max temp	28 MSB 28 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for temp, day and night -199.99 to 199.99 (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
min outside temp	29 LSB 29 MSB	R,W EEPROM	minimum outside temperature which user can set as setpoint for heating enable -199.99 to 199.99 (default = -20°C, 0xF830)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max outside temp	30 MSB 30 MSB	R,W EEPROM	maximum outside temperature which user can set as setpoint for heating enable -199.99 to 199.99 (default = 30°C, 0x0BB8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
min DHW temp	31 LSB 31 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for DHW -199.99 to 199.99 (default = 10°C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max DHW temp	32 MSB 32 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for DHW -199.99 to 199.99 (default = 90°C, 0x2328)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
corr temp	33 MSB 33 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor; compensates the internal thermal dissipation -20.00 to 20.00 (default = about -1.5°C, depending on module type)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

min rh	34 LSB 34 MSB	R,W EEPROM	minimum humidity which user can set as setpoint 0.00% to 100.00% (default = 10%, 0x03E8)	recalculate: humidity = read value / 100 0 … 0 100.00 … 10000
max rh	35 LSB 35 MSB	R,W EEPROM	maximum humidity which user can set as setpoint 0.00% to 100.00% (default = 90%, 0x2328)	recalculate: humidity = read value / 100 0 … 0 100.00 … 10000
corr rh	36 LSB 36 MSB	R,W EEPROM	correction: adds to the actual humidity measured by the internal sensor (applicable for types with humidity sensor only) -10.00 to 10.00 % (default = 0)	recalculate: humidity = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
min remote 0	37 LSB 37 MSB	R,W EEPROM	minimum value which user can set as remote 0 -199.99 to 199.99 (default = -199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max remote 0	38 LSB 38 MSB	R,W EEPROM	maximum value which user can set as remote 0 -199.99 to 199.99 (default = 199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
min remote 1	39 LSB 39 MSB	R,W EEPROM	minimum value which user can set as remote 1 -199.99 to 199.99 (default = -199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max remote 1	40 LSB 40 MSB	R,W EEPROM	maximum value which user can set as remote 1 -199.99 to 199.99 (default = 199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
min remote 2	41 LSB 41 MSB	R,W EEPROM	minimum value which user can set as remote 2 -199.99 to 199.99 (default = -199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

max remote 2	42 LSB 42 MSB	R,W EEPROM	maximum value which user can set as remote 2 -199.99 to 199.99 (default = 199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
min remote 3	43 LSB 43 MSB	R,W EEPROM	minimum value which user can set as remote 3 -199.99 to 199.99 (default = -199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max remote 3	44 LSB 44 MSB	R,W EEPROM	maximum value which user can set as remote 3 -199.99 to 199.99 (default = 199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
min remote 4	45 LSB 45 MSB	R,W EEPROM	minimum value which user can set as remote 4 -199.99 to 199.99 (default = -199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max remote 4	46 LSB 46 MSB	R,W EEPROM	maximum value which user can set as remote 4 -199.99 to 199.99 (default = 199.99)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999
min analogue time programme value	47 LSB 47 MSB	R,W EEPROM	minimum value which user can set as analogue time schedule value 0 to 199.99 (default = 5.0, 0x01F4)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999
max analogue time programme value	48 LSB 48 MSB	R,W EEPROM	maximum value which user can set as analogue time schedule value 0 to 199.99 (default = 36.0, 0x0E10)	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
dec places 1	49 LSB 49 MSB	R,W EEPROM	LSB number of decimals for temperature display (default = 1) MSB number of decimals for temperature setting (default = 1)	0 … no (##) 1 … one (##.#) 2 … two (##.##)

dec places 2	50 LSB 50 MSB	R,W EEPROM	LSB number of decimals for humidity display (default = 0) MSB number of decimals for humidity setting (default = 0)	0 … no (##) 1 … one (##.#) 2 … two (##.##)
dec places 3	51 LSB 51 MSB	R,W EEPROM	LSB number of decimals for remote 0 display (default = 2) MSB number of decimals for remote 0 setting (default = 2)	0 … no (##) 1 … one (##.#) 2 … two (##.##)
dec places 4	52 LSB 52 MSB	R,W EEPROM	LSB number of decimals for remote 1 display (default = 2) MSB number of decimals for remote 1 setting (default = 2)	0 … no (##) 1 … one (##.#) 2 … two (##.##)
dec places 5	53 LSB 53 MSB	R,W EEPROM	LSB number of decimals for remote 2 display (default = 2) MSB number of decimals for remote 2 setting (default = 2)	0 … no (##) 1 … one (##.#) 2 … two (##.##)
dec places 6	54 LSB 54 MSB	R,W EEPROM	LSB number of decimals for remote 3 display (default = 2) MSB number of decimals for remote 3 setting (default = 2)	0 … no (##) 1 … one (##.#) 2 … two (##.##)
dec places 7	55 LSB 55 MSB	R,W EEPROM	LSB number of decimals for remote 4 display (default = 2) MSB number of decimals for remote 4 setting (default = 2)	0 … no (##) 1 … one (##.#) 2 … two (##.##)
dec places analogue time programme	56 LSB	R,W EEPROM	LSB number of decimals for analogue time schedule display (default = 1)	0 … no (##) 1 … one (##.#) 2 … two (##.##)
step minutes	56 MSB	R,W EEPROM	step in minutes for setting time with a knob in time schedules (default = 5 min, 0x05)	
step 1	57 LSB 57 MSB	R,W EEPROM	LSB step for temperature settings (default = 0.5 °C) MSB step for humidity settings (default = 1 %)	step = value / 100 1 … 0.01 2 … 0.02 10 … 0.1 etc.
step 2	58 LSB 58 MSB	R,W EEPROM	LSB step for remote 0 settings (default = 1) MSB step for remote 1 settings (default = 1)	step = value / 100 1 … 0.01 2 … 0.02 10 … 0.1 etc.
step 3	59 LSB 59 MSB	R,W EEPROM	LSB step for remote 2 settings (default = 1) MSB step for remote 3 settings (default = 1)	step = value / 100 1 … 0.01 2 … 0.02 10 … 0.1 etc.
step 4	60 LSB	R,W EEPROM	LSB step for remote 4 settings (default = 1)	step = value / 100 1 … 0.01 2 … 0.02 10 … 0.1 etc.
step time programme	60 MSB	R,W EEPROM	MSB step for analogue time schedule settings (default = 0.5, 0x32)	step = value / 100 1 … 0.01 2 … 0.02 10 … 0.1 etc.

mb timeout	61 LSB	R,W EEPROM	time from the last character in the Modbus frame (**in 5 ms**) after which comes a timeout (range 5...180 ms, default 50 ms = 0x0A)	see register **settings**, frame part receiving Example: 10 = 50 ms
mb answer delay	61 MSB	R,W EEPROM	time to delay the answer to Modbus master, in 5 ms (default = 0 ms)	Example: 10 = 50 ms
show mode	62 LSB 62 MSB	R,W EEPROM	data that roll on the LCD display (default = temperature, 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature °C/°F bit 1 … humidity bit 2 … current time bit 3 … day temp bit 4 … night temp bit 5 … outside temp bit 6 … DHW temp bit 7 … heating curve bit 8 … remote 0 bit 9 … remote 1 bit 10 … remote 2 bit 11 … remote 3 bit 12 … remote 4 bit 13 ... time programme output bit 14: … CO2 bit 15: … set temperature
show time	63 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 2 s, 0x14)	if 0, periodic change disabled
edit return time	63 MSB	R,W EEPROM	time (in 100 ms) of user inactivity to return from edit mode to show mode (default = 10 s, 0x64)	
quick edit value	64 LSB	R,W EEPROM	value which is set by turning the knob. The value must be enabled for editing at **allowed operation modes**. (default = temperature, 0x00)	0 … temperature 1 … humidity 2 … day temp 3 … night temp 4 … outside temp 5 … DHW temp 6 … heating curve 7 … remote 0 8 … remote 1 9 … remote 2 10 … remote 3 11 … remote 4
quick edit mode number	64 MSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob). „Change show mode" changes between displayed values (see **show mode**); pushing the knob displays the first value from the **show mode** register. (default = 0)	0 ... no PUSH function 1 ... presence mode 2 ... day/night mode 3 ... fan 4 ... heat/cool mode 5 ... change show mode 6 ... user pattern mode (see **allowed operation modes**)

long push time	65 LSB	R,W EEPROM	time (in 100 ms) evaluated as *long push* (go to settings menu / leave settings menu). *Super long push* (time schedule edit) follows 2 secs after *long push*. If there is no value editable in the *long push*, then time schedule is edited right away after *long push*. (default = 1.5 s, 0x0F)	
allowed operation modes 2	65 MSB	R,W EEPROM	operation modes that user is able to set in the settings menu 0 … disabled 1 … enabled (default = 0, none of them)	bit 0 … time schedule bit 1 … time bit 2 … user pattern mode bits 3 … 7 - reserved
allowed operation modes	66 LSB 66 MSB	R,W EEPROM	operation modes that user is able to set in the settings menu 0 … disabled 1 … enabled (default = 1, temperature)	bit 0 … temperature bit 1 … humidity bit 2 … day temp bit 3 … night temp bit 4 … outside temp bit 5 … DHW temperature bit 6 … fan bit 7 … heating curve bit 8 … presence mode bit 9 … day/night mode bit 10 …heat/cool mode bit 11 … remote 0 bit 12 … remote 1 bit 13 … remote 2 bit 14 … remote 3 bit 15 … remote 4
presence mode edit mask	67 LSB	R,W EEPROM	states in presence mode that user is able to switch between (default = 0, no states)	bit 0 … comfort (occupied house) bit 1 … standby (empty house) bit 2 … off (Off) bit 3 … party (occupied house + drink) bit 4 … auto (clock) bit 5 … holiday (clock + empty house)
day/night mode edit mask	67 MSB	R,W EEPROM	states in day / night mode that user is able to switch between (default = 0, no states)	bit 0 … day auto (clock + sun) bit 1 … night auto (clock + moon) bit 2 … day manual (sun) bit 3 … night manual (moon) bit 4 ... off (Off) bit 5 ... auto (clock) bit 6 … holiday (clock + empty house)

fan mode edit mask	68 LSB	R,W EEPROM	states in fan mode that user is able to switch between (default = 0, no states)	bit 0 … Auto (fan + A) bit 1 … Man Off (fan + M) bit 2 … Man 1 (fan + M + Stage 1) bit 3 … Man 2 (fan + M + Stage 1,2) bit 4 ... Man 3 (fan + M + Stage 1,2,3)
heat/cool mode edit mask	68 MSB	R,W EEPROM	states in heat / cool mode that user is able to switch between (default = 0, no states)	bit 0 … off (Off) bit 1 … heat only (heat) bit 2 … cool only (cool) bit 3 … fan only (fan) bit 4 ... auto (heat + cool)
user pattern mode edit mask	69 LSB	R,W EEPROM	states in user pattern mode that user is able to switch between (default = 0, no states)	bit 0 ... user_1_pattern bit 1 ... user_2_pattern bit 2 ... user_3_pattern bit 3 ... user_4_pattern bit 4 ... user_5_pattern
	69 MSB		reserved	
Register 70 for UI09x				
set CO2	70 LSB 70 MSB	R, W, EEPROM	CO_2 setpoint for the function of CO_2-stat (see reg. 6, **DO1 settings**) (default = 1200 ppm, 0x04B0)	in ppm
Register 70 for UX0.. and UI0.. (except for UI09x)				
down button short pushes	70 LSB	R	number of short pushes for the „down" button, after reaching the max value the register resets, only UX...	
down button long pushes	70 MSB	R	number of long pushes for the „down" button, after reaching the max value the register resets, only UX...	
remote/local symbols 0	71 LSB 71 MSB	R,W RAM	0 ... symbol controlled locally (symbols cannot be written remotely from Modbus, data are ignored) 1 ... symbol controlled remotely – symbols are not controlled by user (by internal UI… functions); this applies for basic values, i.e. all except **remote_x** (register 81 and below) Use remote control to set individual symbols from your PLC.	bit 0 … clock bit 1 … temp. sensor bit 2 … house bit 3 … person bit 4 … moon bit 5 … sun bit 6 … off bit 7 … drink bit 8 … heat bit 9 … cool bit 10 … water tap (DHW) bit 11 … spanner (service) bit 12 … boiler bit 13 … alarm bell bit 14 … fan lower bit 15 … fan upper

remote/local symbols 1	72 LSB 72 MSB	R,W RAM	0 ... symbol controlled locally (symbols cannot be written remotely from Modbus, data are ignored) 1 ... symbol controlled remotely – symbols are not controlled by user (by internal UI… functions); this applies for basic values, i.e. all except **remote_x** (register 81 and below) Use remote control to set individual symbols from your PLC.	bit 0 … °C bit 1 … °F bit 2 … % bit 3 … rH bit 4 … 1 (weekday) bit 5 … 2 (weekday) bit 6 … 3 (weekday) bit 7 … 4 (weekday) bit 8 … 5 (weekday) bit 9 … 6 (weekday) bit 10 … 7 (weekday) bit 11 … fan auto bit 12 … fan manual bit 13 … fan speed 1 bit 14 … fan speed 2 bit 15 … fan speed 3
remote/local symbols 2	73 LSB 73 MSB	R,W RAM	0 ... symbol controlled locally (symbols cannot be written remotely from Modbus, data are ignored) 1 ... symbol controlled remotely – symbols are not controlled by user (by internal UI… functions); this applies for basic values, i.e. all except **remote_x** (register 81 and below) Use remote control to set individual symbols from your PLC.	bit 0 … SETTING bit 1 … ERROR bit 2 … No. bit 3 … small 7-segment (upper right corner)
display symbols 0	74 LSB 74 MSB	R,W RAM	displayed symbols for basic values including **remote_x**	bit 0 … clock bit 1 … temp. sensor bit 2 … house bit 3 … person bit 4 … moon bit 5 … sun bit 6 … off bit 7 … drink bit 8 … heat bit 9 … cool bit 10 … water tap (DHW) bit 11 … spanner (service) bit 12 … boiler bit 13 … alarm bell bit 14 … fan lower bit 15 … fan upper

display symbols 1	75 LSB 75 MSB	R,W RAM	displayed symbols for basic values including **remote_x**	bit 0 … °C bit 1 … °F bit 2 … % bit 3 … rH bit 4 … 1 (weekday) bit 5 … 2 (weekday) bit 6 … 3 (weekday) bit 7 … 4 (weekday) bit 8 … 5 (weekday) bit 9 … 6 (weekday) bit 10 … 7 (weekday) bit 11 … fan auto bit 12 … fan manual bit 13 … fan speed 1 bit 14 … fan speed 2 bit 15 … fan speed 3
display symbols 2	76 LSB 76 MSB	R,W RAM	displayed symbols for basic values including **remote_x**	bit 0 … SETTING bit 1 … ERROR bit 2 … No. bit 3 … small 7-segment (upper right corner) bit 4-7 ... reserved bit 8-15 ... small 7-segment value, if larger than 9, „h" is displayed
RTC	77 LSB 77 MSB 78 LSB 78 MSB 79 LSB 79 MSB 80 LSB 80 MSB	R,W EEPROM	Real time clock (only implemented in selected types) in BCD coding	see table below. To write to those registers, EEPROM write must be enabled in the **status LSB** register.
remote 0	81 LSB 81 MSB	R,W EEPROM	remote 0 value	recalculate: remote value = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
remote 0 symbols 0	82 LSB 82 MSB	R,W EEPROM	symbols displayed for remote 0	see register **display symbols 0**
remote 0 symbols 1	83 LSB 83 MSB	R,W EEPROM	symbols displayed for remote 0	see register **display symbols 1**
remote 0 symbols 2	84 LSB 84 MSB	R,W EEPROM	symbols displayed for remote 0	see register **display symbols 2**
remote 1	85 LSB 85 MSB	R,W EEPROM	remote 1 value	see **remote 0**
remote 1 symbols 0	86 LSB 86 MSB	R,W EEPROM	symbols displayed for remote 1	see **remote 0, symbols 0**
remote 1 symbols 1	87 LSB 87 MSB	R,W EEPROM	symbols displayed for remote 1	see **remote 0, symbols 1**
remote 1 symbols 2	88 LSB 88 MSB	R,W EEPROM	symbols displayed for remote 1	see **remote 0, symbols 2**

remote 2	89 LSB 89 MSB	R,W EEPROM	remote 2 value	see **remote 0**
remote 2 symbols 0	90 LSB 90 MSB	R,W EEPROM	symbols displayed for remote 2	see **remote 0, symbols 0**
remote 2 symbols 1	91 LSB 91 MSB	R,W EEPROM	symbols displayed for remote 2	see **remote 0, symbols 1**
remote 2 symbols 2	92 LSB 92 MSB	R,W EEPROM	symbols displayed for remote 2	see **remote 0, symbols 2**
remote 3	93 LSB 93 MSB	R,W EEPROM	remote 3 value	see **remote 0**
remote 3 symbols 0	94 LSB 94 MSB	R,W EEPROM	symbols displayed for remote 3	see **remote 0, symbols 0**
remote 3 symbols 1	95 LSB 95 MSB	R,W EEPROM	symbols displayed for remote 3	see **remote 0, symbols 1**
remote 3 symbols 2	96 LSB 96 MSB	R,W EEPROM	symbols displayed for remote 3	see **remote 0, symbols 2**
remote 4	97 LSB 97 MSB	R,W EEPROM	remote 4 value	see **remote 0**
remote 4 symbols 0	98 LSB 98 MSB	R,W EEPROM	symbols displayed for remote 4	see **remote 0, symbols 0**
remote 4 symbols 1	99 LSB 99 MSB	R,W EEPROM	symbols displayed for remote 4	see **remote 0, symbols 1**
remote 4 symbols 2	100 LSB 100 MSB	R,W EEPROM	symbols displayed for remote 4	see **remote 0, symbols 2**
program Monday 1, time	101 LSB 101 MSB	R, W, EEPROM	time schedule, Monday, event 1 time in minutes since 0:00 default = 06:00, 0x0168	121 ... 02 h 01 min
program Monday 1, value	102 LSB 102 MSB	R, W, EEPROM	time schedule, Monday, event 1 (valid for all schedule types: if bit 15 set to 1, event is not active) default = day, 0x0000	state scheduler: 0 ... day / comfort 1 ... night / standby 2 ... off analogue scheduler: value 0 to 19999dec, i. e. 0.0 to 199.99 °C bit 15 ... event disabled
program Monday 2, time	103 LSB 103 MSB	R, W, EEPROM	time schedule, Monday, event 2 time in minutes since 0:00 default = 08:00, 0x01E0	see **program Monday 1, time**
program Monday 2, value	104 LSB 104 MSB	R, W, EEPROM	time schedule, Monday, event 2 (valid for all schedule types: if bit 15 set to 1, event is not active) default = night, 0x0001	see **program Monday 1, value**
program Monday 3, time	105 LSB 105 MSB	R, W, EEPROM	time schedule, Monday, event 3 time in minutes since 0:00 (default = 14:00, 0x0348	see **program Monday 1, time**

program Monday 3, value	106 LSB 106 MSB	R, W, EEPROM	time schedule, Monday, event 3 (valid for all schedule types: if bit 15 set to 1, event is not active) default = day, 0x0000	see **program Monday 1, value**
program Monday 4, time	107 LSB 107 MSB	R, W, EEPROM	time schedule, Monday, event 4 time in minutes since 0:00 default 22:00, 0x0528	see **program Monday 1, time**
program Monday 4, value	108 LSB 108 MSB	R, W, EEPROM	time schedule, Monday, event 4 (valid for all schedule types: if bit 15 set to 1, event is not active) default = night, 0x0001	see **program Monday 1, value**
program Monday 5, time	109 LSB 109 MSB	R, W, EEPROM	time schedule, Monday, event 5 time in minutes since 0:00 default = 06:00, 0x0168	see **program Monday 1, time**
program Monday 5, value	110 LSB 110 MSB	R, W, EEPROM	time schedule, Monday, event 5 (valid for all schedule types: if bit 15 set to 1, event is not active) default = disabled, 0x8000	see **program Monday 1, value**
program Monday 6, time	111 LSB 111 MSB	R, W, EEPROM	time schedule, Monday, event 6 time in minutes since 0:00 default = 06:00, 0x0168	see **program Monday 1, time**
program Monday 6, value	112 LSB 112 MSB	R, W, EEPROM	time schedule, Monday, event 6 (valid for all schedule types: if bit 15 set to 1, event is not active) default = disabled, 0x8000	see **program Monday 1, value**
program Tuesday 1, time	113 LSB 113 MSB	R, W, EEPROM	time schedule, Tuesday, event 1 time in minutes since 0:00 default = 06:00, 0x0168	see **program Monday 1, time**
...	....	...	...	...
program Sunday 6, value	184 LSB 184 MSB	R, W, EEPROM	time schedule, Sunday, event 6 (valid for all schedule types: if bit 15 set to 1, event is not active) default = disabled, 0x8000	see **program Monday 1, value**
user 1 pattern symbols 0	185 LSB 185 MSB	R, W, EEPROM	symbols for user 1 pattern default = 0x0000	bit 0 … clock bit 1 … temp. sensor bit 2 … house bit 3 … person bit 4 … moon bit 5 … sun bit 6 … off bit 7 … drink bit 8 … heat bit 9 … cool bit 10 … water tap (DHW) bit 11 … spanner (service) bit 12 … boiler bit 13 … alarm bell bit 14 … fan lower bit 15 … fan upper

user 1 pattern symbols 1	186 LSB 186 MSB	R, W, EEPROM	symbols for user 1 pattern default = 0x0000	bit 0 … °C bit 1 … °F bit 2 … % bit 3 … rH bit 4 … 1 (weekday) bit 5 … 2 (weekday) bit 6 … 3 (weekday) bit 7 … 4 (weekday) bit 8 … 5 (weekday) bit 9 … 6 (weekday) bit 10 … 7 (weekday) bit 11 … fan auto bit 12 … fan manual bit 13 … fan speed 1 bit 14 … fan speed 2 bit 15 … fan speed 3
user 1 pattern symbols 2	187 LSB 187 MSB	R, W, EEPROM	symbols for user 1 pattern default = 0x0000	bit 0 … SETTING bit 1 … ERROR bit 2 … No. bit 3 … small 7-segment (upper right corner) bit 4-7 ... reserved bit 8-15 ... small 7-segment value, if larger than 9, „h" is displayed
user 2 pattern symbols 0	188 LSB 188 MSB	R, W, EEPROM	symbols for user 2 pattern default = 0x0000	see **user 1 pattern symbols 0**
...	....	...	...	...
user 5 pattern symbols 2	199 LSB 199 MSB	R, W, EEPROM	symbols for user 5 pattern default = 0x0000	see **user 1 pattern symbols 2**
Registers 200 to 204 for UX0...				
actual position	200 LSB	R, RAM	actual position of the blinds (when blinds move, update after 1 s)	in %, 0...100 %
	200 MSB		reserved	
manual control	201 LSB	R, W, RAM	manual blinds control: if the corresponding bit is 1, blinds are commanded remotely and local control is disabled (see **position command**)	bit 0 ... blinds
position command	201 MSB	R, W, RAM	manual blinds settings, the action is performed only at value change (and if enabled in **manual control**)	in %, 0...100 % (0% - blinds up, 100% - blinds down)
sunblind settings	202 LSB	R, W, EEPROM	blinds configuration (default: no action, 0x00)	bits 0...1: command after restart (0 – no action, 1 – up, 2 – down)
rotation time	202 MSB	R, W, EEPROM	time for rotating the blinds by 180 ° (default: 1.2 s, 0x0C)	in 0.1 s
whole position time	203 LSB	R, W, EEPROM	time of transit time between Up and Down positions (default: 70 s, 0x46)	in secs, 1...255

switch short time	203 MSB	R, W, EEPROM	time to distinguish between short and long push for blinds control (short: rotation by **move short time**, long – transit to end position) (default: 0.5 s, 0x05)	in 0.1 s
move short time	204 LSB	R, W, EEPROM	time to rotate the blinds when short push (default: 0.2 s, 0x02)	in 0.1 s, 1...25.5 s
waiting time up/down	204 MSB	R, W, EEPROM	pause time between up and down direction change – to protect the motors (default: 0.7 s, 0x07)	in 0.1 s, 0.6 ... 3.0 s
Registers 200 to 204 for UI09x				
actual CO2 ppm	200 LSB, 200 MSB	R, RAM	actual CO2 value incl. correction (**CO2 sensor corr**)	in ppm
actual CO2 %	201 LSB,	R, RAM	actual CO2 value in %, see **100% CO2 ppm value**, **0% CO2 ppm value**. The **100% C02 ppm value** may be lower than the **0% CO2 ppm value**.	in %
	201 MSB		reserved	
100% CO2 ppm value	202 LSB, 202 MSB	R,W EEPROM	CO2 value in ppm which corresponds 100 % (2500 ppm, 0x09C4)	
0% CO2 ppm value	203 LSB, 203 MSB	R,W EEPROM	CO2 value in ppm which corresponds 0 % (350 ppm, 0x015E)	
CO2 sensor corr	204 LSB, 204 MSB	R,W EEPROM	CO2 sensor correction to compensate altitude, ageing etc. If autocalibration is enabled this value is set each 8 days (under continuous power supply) (0 ppm, 0x0000)	The sensor records the lowest reading and expects that at least once per 8 days the CO2 level reaches the outside air concentration (400 ppm). The lowest measured value is then assigned the 400 ppm level. If this is not the case, the autocalibration will be wrong and must be switched off (register 23 settings, bit 6).
registers 205 are relevant only for UI0... and UX0...				
DI1 counter	205 LSB	R, RAM	counter input DI1 (change from 0 to 1)	if reached maximal value (255) the register is reset
DI2 counter	205 MSB	R, RAM	counter input DI2 (change from 0 to 1)	if reached maximal value (255) the register is reset

push button pushes	206 LSB	R, RAM	number of button pushes	if reached maximal value (255) the register is reset
	206 MSB		reserved	
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	

Real time table

Address	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB		10xsecs				secs			sec	00-59
14 MSB	0	10xmins				mins			min	00-59
15 LSB	0		10xhour	10xhour		hours			hour	00-23
15 MSB	0	0	0	0	0	day			day	01-07
16 LSB	0	0	10xdate			date			date	01-31
16 MSB	0	0	0	10xmonth		month			month	01-12
17 LSB		10xyear				year			year	00-99
17 MSB	0	0	0	0	0	0	0	0	N/A	00

UC100 – room controller, heating, knob + RTC, 1xDO, RS485

- 60 words can be read or written at the same time (i.e. 120 bytes)
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0300hex
firmware	2 LSB 2 MSB	R	firmware version	84hex
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 1** – SW reset enable **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)

status MSB	3 MSB	R, RAM	module status upper byte
			bit 0 0: normal mode
			        1: init mode
			bit 1 1: at the next EEPROM write attempt will all data be written to EEPROM
			      0: at the next EEPROM write attempt will received data be written to RAM only
			bit 2 – 1 – EEPROM initialized
			bit 3 – N/A
			bit 4 – 0
			bit 5 – SW reset enabled
			bit 6 – 0
			bit 7 – commissioning mode (1...active)
				SW reset enabled: see reg. 3 LSB bit 1, reg. 1002.

address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	**!!!** the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	communication speed 10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	**!!!** the change will be effective after restart only (however the register will be set immediately)
serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) **!!!** the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	

EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM writing cycles (EEPROM initialization does not reset register; no overflow)	EEPROM writes
relay	7 LSB	R, RAM	output relay status (DO1)	bit 0 ... relay 1, heating
inputs	7 MSB	R, RAM	binary heating / cooling demands	bit 0-1 ... reserved bit 2 ... heating demand (PID output heat > 5%) bit 3 ... ... cooling demand (PID output cool > 5%)
pid output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100%
pid output COOL	8 MSB	R, RAM	cooling controller output in the change-over mode	in %, range 0 .. 100%
	9 LSB		reserved	
	9 MSB		reserved	
manual control	10 LSB	R, W RAM	manual output control; if a bit is set to 1, the output goes to state defined below (see **manual heat output**); if set to 0, PID output values apply	bit 0 ... reserved bit 1 ... heat output bit 2 – 4 reserved bit 5 ... change over (1 = c/o active)
	10 MSB	R, W RAM	reserved	
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
	11 MSB	R, W RAM	reserved	
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	R, W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual outside temp	22 LSB 22 MSB	R, W RAM	actual outside temperature, may be written to RAM optionally for display	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = comfort/day, 0x0001)	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when* **residential** bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when* **residential** bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
	24 LSB 24 MSB		reserved	
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then according to time schedule (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression
	25 MSB		reserved	
regulator settings	26 LSB	R,W EEPROM	controller configuration (defaults = residential, absolute, valve status, valve protection on, PI control, 0x53)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 –relative, 1 – absolute) bit 2 ... heating/cooling symbols display: 1 – media status according to the c/o signal, 0 – valve status) bit 3 ... reserved bit 4 ... valve exercising (1 – enabled) bit 5 ... valve polarity (0 – NC, 1 – NO) bit 6 ... temp. correction reset when control mode (reg. 25 LSB) changes bit 7 ... control mode (0 – PI, 1 – on/off)
	26 MSB		reserved	

P band	27 LSB 27 MSB	R,W EEPROM	controller P-band (PI control mode) or hysteresis (on/off control mode)	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
	29 LSB 29 MSB		reserved	
	30 LSB 30 MSB		reserved	
	31 LSB 31 MSB		reserved	
	32 LSB 32 MSB		reserved	
min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-3.5 °C, 0x015E)
max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (3.5 °C, 0x015E)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
sensor corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
	38 LSB 38 MSB		reserved	

step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
	40 LSB 40 MSB		reserved	
show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. bit 2 … current time (default = temperature, 0x0001)
show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = 0x01)	0 ... push function inactive 1 ... presence mode 2 ... reserved
change over period	43 MSB	R,W EEPROM	time delay when changing from heating to cooling and back (default = 30)	in mins, 1 to 255
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, RTC time, presence mode, time programme 0x0581)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … reserved bit 10 … time programme

presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)
	47 LSB 47 MSB		reserved	
display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h)	e.g. 121 ... 2h 1min

program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset

reset	1002 LSB 1002 MSB	W, RAM	reset device	The device resets if reset is enabled (see reg. 3), and a non-zero value is written to this register.

Real time table

Address	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB			10xsecs			secs			sec	00-59
14 MSB	0		10xmins			mins			min	00-59
15 LSB	0		10xhour	10xhour		hours			hour	00-23
15 MSB	0	0	0	0	0		dav		day	01-07
16 LSB	0	0	10xdate			date			date	01-31
16 MSB	0	0	0	10xmonth		month			month	01-12
17 LSB		10xyear				year			year	00-99
17 MSB	0	0	0	0	0	0	0	0	N/A	00

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. Inthe commissioning mode, all Modbus data are read-only.

UC150 – room controller, heating, knob + RTC, Ethernet, RTC, 1xDO

- 100 registers can be read at the same time
- 60 registers can be write at the same time
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0350hex
firmware	2 LSB 2 MSB	R	firmware version	old LCD displays: less than 100 new LCD displays: 100 and above (PCB V1.6 and above)
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 1** – SW reset enable **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)
status MSB	3 MSB	R, RAM	module status upper byte **bit 0** 0: normal mode 1: init mode **bit 1** 1: at the next EEPROM write attempt will all data be written to EEPROM 0: at the next EEPROM write attempt will received data be written to RAM only **bit 2** – 1 – EEPROM initialized **bit 3** – N/A **bit 4** – 0 **bit 5** – 1 **bit 6** – 0 **bit 7** – commissioning mode (1...active)	
address	4 LSB 4 MSB 5 LSB 5 MSB	R	uptime [s]	
firmware 2	6 LSB 6 MSB	R	firmware version of the Ethernet processor	
	7 …		….	

In the table above there are only registers which differ from the Modbus map for the UC100 controller. **The complete Modbus register description can be found above in the part UC100, register 7 and on**.

UC200 – room controller, heating and cooling, knob + RTC, 2xDO, 2xDI, RS485

- 60 words can be read at the same time (i.e. 120 bytes)
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0301hex
firmware	2 LSB 2 MSB	R	firmware version	old LCD displays: less than 100 new LCD displays: 100 and above (PCB V1.6 and above)
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 1** – SW reset enable **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)

status MSB	3 MSB	R, RAM	module status upper byte
			bit 0 0: normal mode
			            1: init mode
			bit 1 1: at the next EEPROM write attempt will all data be written to EEPROM
			            0: at the next EEPROM write attempt will all data be written to RAM only
			bit 2 – 1 – EEPROM initialized
			bit 3 – N/A
			bit 4 – 0
			bit 5 – SW reset enabled
			bit 6 – 0
			bit 7 – commissioning mode (1...active)
				SW reset enabled: see reg. 3 LSB bit 1, reg. 1002.

address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	**!!!** the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	communication 10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	**!!!** the change will be effective after restart only (however the register will be set immediately)

serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) **!!!** the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	
EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM writing cycles (EEPROM initialization does not reset register; no overflow)	EEPROM writes
relay	7 LSB	R, RAM	output relay status (DO1, DO2)	bit 0 ... relay 1, heating bit 1 ... relay 2, cooling
inputs	7 MSB	R, RAM	input states, binary heating / cooling demands. DI1 and DI2 are physical input states regardless of the **inputs settings** setting.	bit 0 ... DI1 bit 1 ... DI2 bit 2 ... heating demand (PID output heat > 5%) bit 3 ... cooling demand (PID output cool > 5%)
pid output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100%
pid output COOL	8 MSB	R, RAM	cooling controller output	in %, range 0 .. 100%
	9 LSB		reserved	
	9 MSB		reserved	
manual control	10 LSB	R, W RAM	manual output control; if a bit is set to 1, the output goes to state defined below (see **manual heat output, manual cool output**); if set to 0, PID output values apply	bit 0 ... reserved bit 1 ... heat output bit 2 ... cool output
	10 MSB	R, W RAM	reserved	
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
manual cool output	11 MSB	R, W RAM	manual cool output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	R, W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual outside temp	22 LSB 22 MSB	R, W RAM	actual outside temperature, may be written to RAM optionally for display	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = comfort/day, 0x0001)	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when* **residential** bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when* **residential** bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
	24 LSB 24 MSB		reserved	
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then according to time schedule (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression
	25 MSB		reserved	

controller settings	26 LSB	R,W EEPROM	controller configuration (defaults = hotel, relative, valve status, valve protection on, NC valves, PI control, 0x10)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 –relative, 1 – absolute) bit 2 ... heating/cooling symbols display: 1 – media status according to the c/o signal, 0 – valve status) bit 3 ... reserved bit 4 ... valve exercising (1 – enabled) bit 5 ... valve polarity (0 – NC, 1 – NO) bit 6 ... temp. correction reset when control mode changes (0 ... no, 1 ... yes) bit 7 ... control mode (0 – PI, 1 – on/off)
input settings	26 MSB	R, W, EEPROM	input configuration DI1 – presence DI2 – window contact default: inputs enabled for control, active when on, 0x0F	bit 0 ... DI enabled bit 1 ... DI2 enabled bit 2 ... DI1 sense (0: NC, 1: NO) bit 3 ... DI2 sense (0: NC, 1: NO)
P band	27 LSB 27 MSB	R,W EEPROM	controller P-band (PI control mode) or hysteresis (on/off control mode)	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
controller settings 2	29 LSB	R,W EEPROM	controller configuration 2	bit 0 to 3 … reserved bit 4 … function "heating only" (duplication of heating output) bit 5 … function "cooling only" (duplication of cooling output)
	29 MSB		reserved	
	30 LSB 30 MSB		reserved	
	31 LSB 31 MSB		reserved	
	32 LSB 32 MSB		reserved	

min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-3.5 °C, 0x015E)
max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (3.5 °C, 0x015E)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
sensor corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
	38 LSB 38 MSB		reserved	
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
	40 LSB 40 MSB		reserved	
show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. bit 2 … current time (default = temperature, 0x0001)

show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = 0x01)	0 ... push function inactive 1 ... presence mode 2 ... reserved
	43 MSB		reserved	
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, RTC time, presence mode, time programme, 0x0001)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … reserved bit 10 … time programme
presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)
	47 LSB 47 MSB		reserved	
display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)

RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h)	e.g. 121 ... 2h 1min
program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min

program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset
reset	1002 LSB 1002 MSB	W, RAM	reset device	The device resets if reset is enabled (see reg. 3), and a non-zero value is written to this register.

Real time table

Address	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB		10xsecs			secs				sec	00-59
14 MSB	0	10xmins			mins				min	00-59
15 LSB	0		10xhour	10xhour	hours				hour	00-23
15 MSB	0	0	0	0	0	day			day	01-07
16 LSB	0	0	10xdate		date				date	01-31
16 MSB	0	0	0	10xmonth	month				month	01-12
17 LSB	10xyear				year				year	00-99
17 MSB	0	0	0	0	0	0	0	0	N/A	00

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. In the commissioning mode, all Modbus data are read-only.

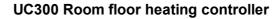## UC250 – room controller, heating and cooling, knob + RTC, Ethernet, 2xDO, 2xDI

- 100 registers can be read at the same time
- 60 registers can be write at the same time
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0351hex
firmware	2 LSB 2 MSB	R	firmware version	old LCD displays: less than 100 new LCD displays: 100 and above (PCB V1.6 and above)
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)

status MSB	3 MSB	R, RAM	module status upper byte
			bit 0 0: normal mode
			          1: init mode
			bit 1 1: at the next EEPROM write attempt will all data be written to EEPROM
			          0: at the next EEPROM write attempt will received data be written to RAM only
			bit 2 – 1 – EEPROM initialized
			bit 3 – N/A
			bit 4 – 0
			bit 5 – 1
			bit 6 – 0
			bit 7 – commissioning mode (1...active)	

address	4 LSB 4 MSB 5 LSB 5 MSB	R	uptime [s]	
firmware 2	6 LSB 6 MSB	R	firmware version of the Ethernet processor	
	7 …		….	

In the table above there are only registers which differ from the Modbus map for the UC200 controller. **The complete Modbus register description can be found above in the part UC200, register 7 and on**.

UC300 – room floor heating controller, knob + RTC, ext. Pt1000 floor sensor, 1xDO, 1xDI, RS485

- 60 words can be read at the same time (i.e. 120 bytes)
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0302hex
firmware	2 LSB 2 MSB	R	firmware version	67hex
status LSB	3 LSB	R, W RAM	module status lower byte **Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB) **calibration** is enabled if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 7 to 1 (indicated by bit 3 in Status MSB) **calibration offset**: set bit 7 from 1 to 0 and write 1 to bit 5 **calibration span**: set bit 7 from 1 to 0 and write 1 to bit 6	**bit 0** – write to EEPROM enabled **bit 4** – init EEPROM **bit 5** – calibration offset **bit 6** – calibration span **bit 7** – calibration enabled
status MSB	3 MSB	R, RAM	module status upper byte **bit 0** 0: normal mode 1: init mode **bit 1** 1: at the next EEPROM write attempt will all data be written to EEPROM 0: at the next EEPROM write attempt will received data be written to RAM only **bit 2** – 1 – EEPROM initialized **bit 3** – 0 – calibration disabled – 1 – calibration enabled **bit 4** – 0 **bit 5** – 1 **bit 6** – 0 **bit 7** – commissioning mode (1 ... active)	
address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	**!!!** the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	communication 10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	**!!!** the change will be effective after restart only (however the register will be set immediately)

serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) **!!!** the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	
	6 LSB 6 MSB		reserved	
relay	7 LSB	R, RAM	output relay status (DO1)	bit 0 ... relay 1, heating
inputs	7 MSB	R, RAM	digital input status - physical level of the input regardless of the **inputs settings** values (the function of input (presence / window) is set in **inputs settings** register)	bit 0 ... DI1 bit 1 ... reserved bit 2 ... heating demand (PID output heat > 5%)
pid output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100%
	8 MSB		reserved	
	9 LSB		reserved	
	9 MSB		reserved	
manual control	10 LSB	R, W RAM	manual output control; if a bit is set to 1, the output goes to state defined below (see **manual heat output**); if set to 0, PID output values apply	bit 0 ... reserved bit 1 ... heat output
push button counter	10 MSB	R, W RAM	push button counter; after overflow is reset	
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
	11 MSB		reserved	
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
	14 LSB 14 MSB		reserved	

set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
	18 LSB 18 MSB		reserved	
	19 LSB 19 MSB		reserved	
	20 LSB 20 MSB		reserved	
actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual external (floor) temp	22 LSB 22 MSB	R, RAM	actual floor temperature measured by the external Pt1000 sensor inclusive correction (see **external temp sensor corr**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = comfort/day, 0x0001)	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when* **residential** bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when* **residential** bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
	24 LSB 24 MSB		reserved	
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then according to time schedule (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression
	25 MSB		reserved	
regulator settings	26 LSB	R,W EEPROM	controller configuration (defaults = hotel, relative, valve status, valve protection on, no cascade control, correction reset, 0x90)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 – relative, 1 – absolute) bit 2 … regulation type (0 – PI, 1 – on/off) bit 3 ... reserved bit 4 ... valve exercising (1 – enabled) bit 5 ... valve polarity (0 – NC, 1 – NO) bit 6 ... cascade control enabled (if controller configured as with external sensor, this bit does not apply, see **controller settings 2**) bit 7 ... temp correction reset when control mode changes (0 ... no, 1 ... yes)

inputs settings	26 MSB	R,W EEPROM	DI1 configuration (defaults = enabled, active when on, window contact, 0x05)	bit 0 ... enable DI1 bit 1 ... reserved bit 2 ... DI1 input logic (0 – NC, 1 – NO) bit 3 ... reserved bit 4 ... DI1 function: 0 - window contact, 1 - presence
P band	27 LSB 27 MSB	R,W EEPROM	controller P-band (PI control mode) or hysteresis (on/off control mode)	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
controller settings 2	29 LSB	R,W EEPROM	bits 0 and 1: controller type	0 ... floor heating (int. sensor = room sensor, ext. sensor = floor temp limitation) 1 ... controller with ext. sensor (int. sensor = not used, ext. sensor = room sensor) 2 ... average from ext. and int. sensors = room sensor (e.g. for larger rooms)
	29 MSB		reserved	
	30 LSB 30 MSB		reserved	
max external temp	31 LSB 31 MSB	R,W EEPROM	maximum floor temperature (recommended values are 32 °C for bathrooms, 28 °C for residential rooms), if the controller is configured as with external sensor (see **controller settings 2**), this limitation is ignored. If **actual floor temp** > **max external temp** the heating is blocked. (default = 28 °C, 0x0AF0)	recalculate: max temperature = read value / 100 0 … 0 20.00 … 2000 -0.01 … 0FFFFhex -20.00 … 0F830hex
max tracing floor difference	32 LSB 32 MSB	R,W EEPROM	value for floor temperature limitation: if **actual floor temp** > **actual setpoint heat** + **max tracing floor difference** the heating is blocked. If the controller is configured as with external sensor (see **controller settings 2**), this limitation is ignored. (default 3 K, 0x012C)	recalculate: temperature = read value / 100 0 … 0 20.00 … 2000 -0.01 … 0FFFFhex -20.00 … 0F830hex

min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-3.5 °C, 0x015E)
max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (3.5 °C, 0x015E)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
sensor corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
external temp sensor corr	38 LSB 38 MSB		correction: adds to the actual temperature measured by the external floor sensor -20.00 to 20.00 (default = 0 K, 0x0000)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
	40 LSB 40 MSB		reserved	

show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … int. temperature sensor bit 1 … ext. temperature sensor bit 2 … current time bit 3 … PI controller actual temperature (see **controller settings 2**) (default = actual control temperature, 0x0008)
show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = 0x01)	0 ... push function inactive 1 ... presence mode 2 ... reserved
	43 MSB		reserved	
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, RTC time, presence mode, time programme 0x0581)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 to 6 … reserved bit 7 … RTC time bit 8 … presence mode bit 9 … reserved bit 10 … time programme
presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)
	47 LSB 47 MSB		reserved	

display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h)	e.g. 121 ... 2h 1min
program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled

program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset

Real time table

Address	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB		10xsecs				secs			sec	00-59
14 MSB	0	10xmins				mins			min	00-59
15 LSB	0		10xhour	10xhour		hours			hour	00-23
15 MSB	0	0	0	0	0	day			day	01-07
16 LSB	0	0	10xdate			date			date	01-31
16 MSB	0	0	0	10xmonth		month			month	01-12
17 LSB		10xyear				year			year	00-99
17 MSB	0	0	0	0	0	0	0	0	N/A	00

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. In the commissioning mode, all Modbus data are read-only.

FC010 – fancoil controller (with UC010), RTC, 5xDO, 2xDI, 2xRS485

- 50 words can be read at the same time (i.e. 100 bytes)
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0500$_{hex}$
firmware	2 LSB 2 MSB	R	firmware version	F$_{hex}$
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 1** – SW reset enabled **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)
status MSB	3 MSB	R, RAM	module status upper byte **bit 0** 0 normal mode 1 init mode **bit 1** 1 at the next EEPROM write attempt will all data be written to EEPROM 0 at the next EEPROM write attempt will received data be written to RAM only **bit 2** – 1 – EEPROM initialized **bit 3** – N/A **bit 4** – 0 **bit 5** – SW reset enabled **bit 6** – 0 **bit 7** – commissioning mode (1 – active)	**SW reset** enabled: see reg. 3 LSB bit 1, reg. 1002.
address	4 LSB	R,W EEPROM	Modbus module address (default = 1) To distribute load, fans and outputs are enabled after *address mod 10* secs	**!!!** the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	communication speed 10$_{dec}$ … 1 200 bps 11$_{dec}$ … 2 400 bps 12$_{dec}$ … 4 800 bps 13$_{dec}$ … 9 600 bps (default) 14$_{dec}$ … 19 200 bps 15$_{dec}$ … 38 400 bps 16$_{dec}$ … 57 600 bps 17$_{dec}$ … 115 200 bps	**!!!** the change will be effective after restart only (however the register will be set immediately)

serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) **!!!** the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	
EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM writing cycles, does not overflow, cannot be reset by INIT nor by any other means	
relay	7 LSB	R, RAM	output relay status (DO1-DO5)	bit 0 ... relay 1, heating (and cooling when C/O) bit 1 ... relay 2, only cooling bit 2 ... relay 3, fan st. 1 bit 3 ... relay 4, fan st. 2 bit 4 ... relay 5, fan st. 3
inputs	7 MSB	R, RAM	digital input status (DI1 ... presence, DI2 ... window / alarm contact) and heat/cool demands; DI1 and DI2 are influenced by the **inputs settings** register settings. If the FC010 is a master (with multiple controllers with a single room unit), the slave DI states are included in this status. The master FC010 controller must have inputs enabled (**input settings**, bits 0 and 1) to include slave DIs.	bit 0 ... input DI1 bit 1 ... input DI2 bit 2 ... heating demand (PID output HEAT > 5%) bit 3 ... cooling demand (PID output COOL > 5%)
PID output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100%
PID output COOL	8 MSB	R, RAM	cooling controller output (also in the changeover (C/O) mode)	in %, range 0 .. 100%
PID fan speed	9 LSB	R, RAM	fan demand from the PID controller	0 ... off 1 ... Stage 1 2 ... Stage 2 3 ... Stage 3
UC comm. state	9 MSB	R, RAM	communication status of the room unit UC 010 (if comm fails for 60 secs, all controller outputs go to off (except for those controlled manually, see register **manual control**)	0 ... communication OK 1 ... timeout 2 ... MB exception 3 ... MB error
manual control	10 LSB	R, W RAM	manual output control; if a bit is set to 1, the output goes to state defined below (see **manual fan speed, manual heat output, manual cool output**); if set to 0, PID output values apply	bit 0 ... fan bit 1 ... heat output bit 2 ... cool output bit 3 to 4 … reserved **bit 5 ... C/O (1 = on)**
manual fan speed	10 MSB	R, W RAM	manual fan speed setting (only if the corresponding bit in the **manual control** register is set)	0 ... off 1 ... Stage 1 2 ... Stage 2 3 ... Stage 3

manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
manual cool output	11 MSB	R, W RAM	manual cool output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	R,W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual outside temp	22 LSB 22 MSB	R, W RAM	actual outside temperature, may be written to RAM optionally for display	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = comfort/day, 0x0001)	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when* **residential** bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when* **residential** bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)

set fan mode	24 LSB 24 MSB	R,W EEPROM	fan status set by user; if the fan is on **Manual Off** the cooling/heating valves are closed (default = auto, 0x0001)	bit 0 … Auto (fan + A) bit 1 … Off (fan + M) bit 2 … Man 1 (fan + M + Stage1) bit 3 … Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1, 2 and 3) bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then the **actual control mode** is according to time schedule (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression
FC slaves communication state	25 MSB	R, RAM	status of communication with slave FC010 controllers (if multislave configuration)	0 ... OK 1 etc. ... first FC010 address which has comm fail
regulator settings	26 LSB	R,W EEPROM	controller configuration (defaults = hotel, relative, fan is on at heat and cool, 3 stage fan, valve protection on, 0x40)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 –relative, 1 – absolute) bit 2 ... 1 - stop fan when HEAT, 0 – fan can be on when HEAT) bit 3 ... 1 - stop fan when COOL, 0 – fan can be on when COOL) bits 4-5 ... fan type (00 – 3 stages, 01 – 2 stages, 10 – 1 stage) bit 6 ... valve exercising (1 – enabled) bit 7 ... valve type (0 ... NC, 1 ... NO)
inputs	26 MSB	R,W EEPROM	inputs configuration DI1 ... presence DI2 ... window / alarm contact (default = inputs enabled, normally open, i.e. active when contact on, 0x0F)	bit 0 … DI1 enabled for operation mode control bit 1 … DI2 enabled for operation mode control bit 2 ... DI1 sense (0– NC– normally closed, 1–NO– normally open) bit 3 ... DI2 sense (0– NC – normally closed, 1– NO–normally open)

P band	27 LSB 27 MSB	R,W EEPROM	**controller P-band** (input deviation for output proportional part of 100 %) **or hysteresis if On/Off** (hysteresis for heating is under the setpoint, for cooling above the set-point) PI or OnOff setting see Reg. 29, bit 4	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
regulator settings 2	29 LSB	R,W EEPROM	controller configuration (defaults = fan stage reset enable, slave off, DI2 as window contact, correction reset enable, PI control, 4-pipe, 0x89)	bit 0 ... fan stages reset to Auto when scheduler changes the presence mode bit 1 ... enable FC Slave function (controller will not communicate with UC010) – change only applies after restart bit 2 ... DI2 as alarm input, switches off all outputs bit 3 .. temp correction reset to 0 when presence mode changes bit 4 ... control mode (0 – PI, 1 – on/off) bit 5 … reserved bit 6 … reserved bit 7 ... fancoil type: 0: 2-pipe, 1: 4-pipe.
multi-slave number	29 MSB	R,W EEPROM	amount of slave FC010 (connected to the same bus as UC010, starting with Modbus address 10) – if this value is non-zero, the controller acts as a master (change is applied after device restart); from slave modules inputs are read and added to master inputs to control the controller mode (default = 0)	0 ... multi-slave function is off 1 or above ... number of FC010 slave modules
	30 LSB 30 MSB		reserved	
latch enable	31 LSB	R, W RAM	Latch enable function for individual inputs: By writing **1** into the register the particular bit in the **latched value** register goes to 0 and is kept until the required value is catched. After reset, the whole register is set to 0.	Resetting of the individual catched bits in the **latched Value register**: change the particular bit from log. 0 to log.1 (disable and enable the latch function for individual bits)

	31 MSB		reserved	
latched values	32 LSB	R RAM	catched values **0 –** since latch enable there was **no change** on the bit **1 -** since latch enable the bit value **has changed** its state	bit 0 is input 1 bit 1 is input 2 to reset the bits, disable and enable latch - see **latch enable**
	32 MSB		reserved	
min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-3.5 °C, 0x015E)
max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (3.5 °C, 0x015E)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
latch state	38 LSB	R,W EEPROM	state which will be catched: **0 –** it will be catched log. 0 **1 –** it will be catched log. 1 (catched log. 0, 0x00)	bit 0 is input 1 bit 1 is input 2
presence off delay	38 MSB	R,W EEPROM	time delay after presence signal off (by DI1), default = 0	[0 … 255 min]

step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
	40 LSB 40 MSB		reserved	
show mode	41 LSB	R,W RAM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. bit 2 … current time bit 3 … temperature correction (default = temperature, 0x0001)
fan start delay	41 MSB	R,W RAM	delay after valve open signal to fan start (if 0 – function off) For heating only. Prevents cold air boost at morning starts.	[in tens of second] 2 … 20 seconds
show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = fan mode, 0x02)	0 ... push function inactive 1 ... presence mode 2 ... fan mode
change-over period	43 MSB	R,W EEPROM	time delay when switching between heating and cooling modes (default = 30 min, 0x1E)	in minutes, 1...255
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings

allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, fan mode 0x0201)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … fan mode bit 10 … time programme
presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)
fan mode edit mask	47 LSB 47 MSB	R,W EEPROM	fan states that user is able to switch between (default = all, 0x001F)	bit 0 … Auto (fan + A) bit 1 … Off (fan + M) bit 2 … Man 1 (fan + M + Stage1) bit 3 … Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1, 2 and 3)
display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable (if set to 1 the value will be written into register, if in 0 attempt will be ignored)
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table below; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min

program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h)	e.g. 121 ... 2h 1min
program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled

program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset
reset	1002 LSB 1002 MSB	W, RAM	reset device	The device resets if reset is enabled (see reg. 3), and a non-zero value is written to this register.

Real time table

Address	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB		10xsecs				secs			sec	00-59
14 MSB	0	10xmins				mins			min	00-59
15 LSB	0		10xhour	10xhour		hours			hour	00-23
15 MSB	0	0	0	0	0	day			day	01-07
16 LSB	0	0	10xdate			date			date	01-31
16 MSB	0	0	0	10xmonth		month			month	01-12
17 LSB		10xyear				year			year	00-99
17 MSB	0	0	0	0	0	0	0	0	N/A	00

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. In the commissioning mode, all Modbus data are read-only.

FC015 – VAV controller (with UC095), RTC, 2xDO, 3xAO 0-10 V, 2xDI, 2xRS485

- 50 words can be read at the same time (i.e. 100 bytes)
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0504hex
firmware	2 LSB 2 MSB	R	firmware version	Fhex
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 1** – SW reset enabled **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB) SW reset follows if enabled and 1 is written into the **SW reset** register (address 1002)

status MSB	3 MSB	R, RAM	module status upper byte
			bit 0 0 normal mode
			         1 init mode
			
			bit 1 1 at the next EEPROM write attempt will all data be written to EEPROM
			         0 at the next EEPROM write attempt will received data be written to RAM only
			bit 2 – 1 – EEPROM initialized
			bit 3 – N/A
			bit 4 – 0
			bit 5 – SW reset enabled indication
			bit 6 – 0
			bit 7 – commissioning mode (1 – active)	

address	4 LSB	R,W EEPROM (0x01)	Modbus module address (default = 1) To distribute load, fans and outputs are enabled after address mod 10 secs	**!!!** the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM (9600 bps, 13dec)	communication speed 10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	**!!!** the change will be effective after restart only (however the register will be set immediately)

serial port settings	5 LSB	R,W EEPROM (no parity, one stop bit, 0x00)	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) **!!!** the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	
EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM writing cycles, does not overflow, cannot be reset by INIT nor by any other means	
relay	7 LSB	R, RAM	output relay status (DO1-DO2)	bit 0 ... relay 1, heating bit 1 ... relay 2, cooling
inputs	7 MSB	R, RAM	digital input status (DI1 ... presence, DI2 ... window / alarm contact)	bit 0 ... input DI1 bit 1 ... input DI2 bit 2 ... heating demand (PID output HEAT > 5%) bit 3 ... cooling demand (PID output COOL > 5%)
PID output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100% (corresponds 0 .. 10 V)
PID output COOL	8 MSB	R, RAM	cooling controller output (active also at change-over mode)	in %, range 0 .. 100% (corresponds 0 .. 10 V)
VAV output	9 LSB	R, RAM	air damper demand from the CO_2 controller	in %, range 0 .. 100% (corresponds 0 .. 10 V)
UC comm. state	9 MSB	R, RAM	communication status of the room unit UC 095 (if communication fails for 60 secs, all controller outputs go to off (except for those controlled manually, see register **manual control**)	0 ... communication OK 1 ... timeout 2 ... MB exception 3 ... MB error
manual control	10 LSB	R, W RAM	manual output control and change-over (C/O); if a bit is set to 1, the output goes to state defined below (see **manual fan speed, manual heat output, manual cool output**); if set to 0, PI controller output values apply	bit 0 ... fan bit 1 ... heat output bit 2 ... cool output bit 3 ... DO1 state bit 4 ... DO2 state **bit 5 ... C/O (1 = active)**
manual VAV	10 MSB	R, W RAM	manual VAV output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
manual cool output	11 MSB	R, W RAM	manual cool output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint including setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set depression/ economy cooling temp	20 LSB 20 MSB	R,W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **temp sensor corr**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual outside temp	22 LSB 22 MSB	R, W RAM	actual outside temperature, may be written to RAM optionally for display	recalculate: temperature = read value/ 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = comfort/day, 0x0001) Comfort/Day sets VAV output to VAVmin … 100 %. Standby/Night sets VAV output to VAVmin Off/Depression sets VAV output to 0 %.	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when* **residential** bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when* **residential** bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
set VAV mode	24 LSB 24 MSB	R,W EEPROM	VAV status set by user; the stages correspond to: Off: VAVmin (as in reg. 138) Man1: 30 % Man2: 70 % Man3: 100 % (default = Auto, 0x0001)	bit 0 … Auto (fan + A) bit 1 … Off (fan + M) bit 2 … Man 1 (fan + M + Stage1) bit 3 … Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1,2 and 3) bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)

actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then the **actual control mode** is according to time schedule (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression
FC slaves communication state	25 MSB	R, RAM	status of communication with slave FC015 controllers (if multislave configuration)	0 ... OK 1 etc. ... first FC015 address which has communication fail
regulator settings	26 LSB	R,W EEPROM	controller configuration; (defaults = hotel, relative, valve protection enabled, NC, 0x40)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 –relative, 1 – absolute) bits 2-5 ... reserved bit 6 ... valve exercising (1 – enabled) bit 7 ... valve type (0 ... NC, 1 ... NO)
inputs settings (inputs enable, inputs logic)	26 MSB	R,W EEPROM	inputs configuration DI1 ... presence DI2 ... window / alarm contact (default = inputs enabled, normally open, i.e. active when contact on, 0x0F)	bit 0 … DI1 enabled for operation mode control bit 1 … DI2 enabled for operation mode control bit 2 ... DI1 sense (0– NC– normally closed, 1–NO– normally open) bit 3 ... DI2 sense (0– NC – normally closed, 1– NO–normally open)
P band/ On-Off hysteresis	27 LSB 27 MSB	R,W EEPROM	**controller P-band** (input deviation for output proportional part of 100 %) or **hysteresis if On/Off** (hysteresis for heating is under the setpoint, for cooling above the set-point) PI or OnOff setting see Reg. 29, bit 4	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; depends on bandwidth if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (15 min, 0x0384)

regulator settings 2	29 LSB	R,W EEPROM	controller configuration, part 2 (defaults = fan stage reset enable, slave off, DI2 as window contact, correction reset enable, PI control, autocalibration enabled, 4-pipe, 0xC9)	bit 0 ... fan stages reset to Auto when scheduler changes the presence mode bit 1 ... enable FC Slave function (controller will not communicate with UC095) – change only applies after restart bit 2 ... DI2 as alarm input, switches off all outputs bit 3 .. temp correction reset to 0 when presence mode changes bit 4 ... control mode (0 – PI, 1 – on/off) bit 5 … reserved bit 6 … CO_2 autocalibration active bit 7 ... fancoil type: 0: 2-pipe, 1: 4-pipe.
multi-slave number	29 MSB	R,W EEPROM	amount of FC015 slaves (connected to the same bus as UC095, starting with Modbus address 10) – if this value is non-zero, the controller acts as a master !!! the change will be effective after restart only (default = 0)	0 ... multi-slave function is off 1 or above ... number of FC015 slave modules
actual primary CO_2 ppm	30 LSB 30 MSB	R,RAM	actual CO_2 sensor value in ppm with correction (see **reg. 40**)	[ppm]
latch enable	31 LSB	R, W RAM	Latch enable function for individual inputs: By writing **1** into the register the particular bit in the **latched value** register goes to 0 and is kept until the required value is catched. After reset, the whole register is set to 0.	Resetting of the individual catched bits in the **latched Value register**: change the particular bit from log. 0 to log.1 (disable and enable the latch function for individual bits)
	31 MSB		reserved	
latched values	32 LSB	R RAM	catched values **0 –** since latch enable there was **no change** on the bit **1 -** since latch enable the bit value **has changed** its state	bit 0 is input 1 bit 1 is input 2 to reset the bits, disable and enable latch - see **latch enable**
	32 MSB		reserved	
min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-5 K, 0x01F4)

max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (5 K, 0x01F4)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -3,2 K, 0xFEC0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
latch state	38 LSB	R,W EEPROM	state which will be catched: **0** – it will be catched log. 0 **1** – it will be catched log. 1 (catched log. 0, 0x00)	bit 0 is input 1 bit 1 is input 2
	38 MSB		reserved	
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 10 … 0.1 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
CO_2 sensor corr	40 LSB 40 MSB	R,W EEPROM	correction of the CO_2 sensor (elimination of influence of height above sea level, calibration, …), if it is auto-calibration enabled and power supply is connected without interruption, it is calibrated once per 8 days	**Auto-calibration** – during 8 days period must the CO_2 concentration decrease to base level (outdoor concentration 400 ppm) at least once. Otherwise, autocalibration is not working and must be switched off. (reg. 29LSB, bit 1) [-5000 .. 5000 ppm]

show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. bit 2 … current time bit 3 … temperature correction (default = temperature, 0x0001)
show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in secs) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = presence mode, 0x01)	0 ... push function inactive 1 ... presence mode 2 ... fan mode
change-over period	43 MSB	R,W EEPROM	time delay when switching between heating and cooling modes (default = 60 s, 0x3C)	in seconds, range 1...255
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode [range 0.1…25.5 s]
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and temperature settings [range 0.1…25.5 s]
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, presence mode 0x0101)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … fan mode bit 10 … time programme
presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = day/night, 0x0003)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)

fan mode edit mask	47 LSB 47 MSB	R,W EEPROM	fan states that user is able to switch between (default = all, 0x001F)	bit 0 … Auto (fan + A) bit 1 … Off (fan + M) bit 2 … Man 1 (fan + M + Stage1) bit 3 … Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1, 2 and 3)
display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable (if set to 1 the value will be written into register, if in 0 attempt will be ignored)
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table below; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0, 0x000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h,0x01E0)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1, 0x0001)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h, 0x0348)	e.g. 121 ... 2h 1min
program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0, 0x0000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled

program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h, 0x0528)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1, 0x0001)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
VAV minimum	138 LSB 138 MSB	R, W EEPROM	minimum value for VAV box (It is set for AQ controller output of 0 %.) (default = 3.0 V, 0x012C)	in 0.01 V [range 0 V … 10,00 V]
AQ P Band	139 LSB 139 MSB	R, W EEPROM	bandwidth of the Air quality controller (linearization between VAV min. and max. of 10 V) (1000 ppm, 0x03E8)	[range 1 … 5000 ppm]
AQ set point	140 LSB 140 MSB	R, W EEPROM	room CO_2 setpoint	[range 0 … 5000 ppm]

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uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset
SW reset	1002 LSB 1002 MSB	R, W RAM	If a non-zero value is written and SW reset is enabled (see Status LSB bit 1), the device is restarted.	

Real time table

Addr.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB			10xsecs			seconds			secs	00-59
14 MSB	0		10xmins			minutes			mins	00-59
15 LSB	0		10xhours	10xhours		hours			hours	00-23
15 MSB	0	0	0	0	0		day		day	01-07
16 LSB	0	0	10xdate			date			date	01-31
16 MSB	0	0	0	10xmonth		month			month	01-12
17 LSB		10xyear				year			year	00-99
17 MSB	0	0	0	0	0	0	0	0	not used	00

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. In the commissioning mode, all Modbus data are read-only.

FC020 – fancoil controller, RTC, 4xAI, 2xAO, 7xDO, 4xDI, 2xRS485

- 50 words can be read at the same time (i.e. 100 bytes)
- whole range can be addressed bitwise

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0501hex
firmware	2 LSB 2 MSB	R	firmware version	e.g. 0005hex
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 4** – init EEPROM **bit 5** – calibration offset **bit 6** –calibration span **bit 7** –calibration enable	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB) **calibration** is enabled if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 7 to 1 (indicated by bit 3 in Status MSB) **calibration offset** is performed by setting bit 7 to 0 (must have been in 1 before) and setting bit 5 to 1 **calibration span** is performed by setting bit 7 to 0 (must have been in 1 before) and setting bit 6 to 1

status MSB	3 MSB	R, RAM	module status upper byte
			bit 0 0 normal mode
			          1 init mode
			bit 1 1 at the next EEPROM write attempt will all data be written to EEPROM
			          0 at the next EEPROM write attempt will received data be written to RAM only
			bit 2 – 1 – EEPROM initialized
			bit 3 – 0 calibration disabled
			          1 calibration enabled
			bit 4 – 0
			bit 5 – 1
			bit 6 – 0
			bit 7 – 1	

address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	**!!!** the change will be effective after restart only (however the register will be set immediately)

baud rate	4 MSB	R,W EEPROM	communication speed 10$_{dec}$ … 1 200 bps 11$_{dec}$ … 2 400 bps 12$_{dec}$ … 4 800 bps 13$_{dec}$ … 9 600 bps (default) 14$_{dec}$ … 19 200 bps 15$_{dec}$ … 38 400 bps 16$_{dec}$ … 57 600 bps 17$_{dec}$ … 115 200 bps	**!!!** the change will be effective after restart only (however the register will be set immediately)
serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bits 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) **!!!** the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	
	6 LSB 6 MSB		reserved	
relay	7 LSB	R, RAM	output relay status (DO1-DO7), outputs DO4 and DO5 are not controlled by any internal algorithm in this firmware version	bit 0 ... DO1, fan st. 1 bit 1 ... DO2, fan st. 2 bit 2 ... DO3, fan st. 3 bit 3 ... DO4, bit 4 ... DO5, bit 5 ... DO6, heating bit 6 ... DO7, cooling
inputs	7 MSB	R, RAM	digital input status and heat/cool demands; DIx are physical values and are **not** influenced by the **inputs settings** register settings	bit 0 ... DI1, presence bit 1 ... DI2, window contact bit 2 ... DI3, change-over bit 3 ... DI4, party mode bit 4 ... heating demand (PID output HEAT > 5%) bit 5 ... cooling demand (PID output COOL > 5%)
PID output HEAT	8 LSB	R, RAM	heating controller output (or cooling output at change-over active)	in %, range 0 .. 100%
PID output COOL	8 MSB	R, RAM	cooling controller output (also at change-over active)	in %, range 0 .. 100%
PID fan speed	9 LSB	R, RAM	fan demand from the PID controller	0 ... off 1 ... Stage 1 2 ... Stage 2 3 ... Stage 3
UC communication state	9 MSB	R, RAM	communication status of UC010: if communication is not OK, after 60 secs the outputs go to 0 (except those controlled manually, see **manual control**)	0 ... communication OK 1 ... timeout 2 ... MB (motherboard) exception 3 ... MB error

manual control	10 LSB	R, W RAM	**bits 0..2**: manual output control; if a bit is set to 1, the output goes to state defined below (see **manual fan speed, manual heat output, manual cool output**); if set to 0, PID output values apply **bits 3..4**: always controlled through outputs **bit 5**: change-over command over bus; active only if hardware C/O disabled, see **input settings**	bit 0 ... fan bit 1 ... heat output bit 2 ... cool output bit 3 ... DO4 bit 4 ... DO5 bit 5 ... SW change-over command
manual fan speed	10 MSB	R, W RAM	manual fan speed setting (only if the corresponding bit in the **manual control** register is set)	0 ... off 1 ... Stage 1 2 ... Stage 2 3 ... Stage 3
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
manual cool output	11 MSB	R, W RAM	manual cool output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
set temp correction UC010	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; see register 29 LSB (**controller settings 2**) bit 3 for enabling write through modbus map 3.5°C reads 350 (limits see **min. & max. rel.temp correction**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	R,W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp UC010	21 LSB 21 MSB	R, RAM	actual temperature measured by the UC010 room unit incl. correction (see **temp sensor corr**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual FC020 temp	22 LSB 22 MSB	R, RAM	actual temperature input AI1, Pt1000 sensor, incl. correction (see **temp sensor corr FC020**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (if inputs Presence and Window contact are enabled and active – see **input settings** -, they have priority over this register) (default = comfort/day, 0x0001)	bit 0 … comfort / day bit 1 … standby / night bit 2 … off / depression bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto) bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
set fan mode	24 LSB 24 MSB	R, W, EEPROM	fan status set by user (default = auto, 0x0001)	bit 0 … Auto (fan + A) bit 1 … Off (fan + M) bit 2 … Man 1 (fan + M + Stage1) bit 3 … Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1,2 and 3) bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then the **actual control mode** is according to time schedule	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression
reserved	25 MSB	R, RAM		
controller settings	26 LSB	R,W EEPROM	controller configuration. If set as 2-pipe, the C/O function is enabled. (defaults = hotel, relative, fan is on at heat and cool, 3 stage fan, valve protection on, NC valves: 0x40)	bit 0 ... presence mode (0 – hotel, 1 – residential) bit 1 … setpoint shift display (0: relative, 1: absolute temp.) bit 2 ... 1 - stop fan when HEAT, 0 – fan allowed when HEAT) bit 3 ... 1 - stop fan when COOL, 0 – fan allowed when COOL) bits 4-5 ... fan type (00 – 3 stages, 01 – 2 stages, 10 – 1 stage) bit 6 ... valve exercising (1 – enabled) bit 7 ... valve actuator type: 0: NC, 1: NO

input settings	26 MSB	R,W EEPROM	inputs configuration DI1 ... presence DI2 ... window contact DI3 ... change-over (if disabled, then SW C/O function is enabled – C/O command is sent over the bus, see **manual control**) DI4 ... party mode (default = inputs enabled, normally open, i.e. active when contact closed, 0xFF)	bits 0 … 3: inputs DI1 (bit 0) to DI4 (bit 3) enabled for controller function bits 4 … 7: inputs DI1 (bit 0) to DI4 (bit 3) sense (0– NC– normally closed, 1– NO– normally open)
P band	27 LSB 27 MSB	R,W EEPROM	controller P-band	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
controller settings 2	29 LSB	R,W EEPROM	controller configuration, part 2. Limitation: AI1 acts as a supply air sensor which limits the supply air temp. (see **limitation temp heat & cool**). The control sensor is the UC010 sensor. If the AI1 sensor is not connected, limitation is not active and the UC010 sensor is the control sensor. Defaults: AI1, UC010 not connected, 4-pipe fan: 0x80	bit 3… 0 - controlling according bit 4 and 5 1 – controlling according temperature in Modbus map (with no sensors connected); setpoint is set in 12 LSB/MSB and actual temperature is to be written to 21 LSB/MSB. Bits 4 and 5 must be set to 0. bits 4 and 5 ... limitation (00 – AI1 = limitation sensor, 01 – AI1 = control sensor, 10 – average (AI1, UC010) = control sensor) bit 6 ... UC010 connected (0 – not conn., 1 – connected) bit 7: fancoil type (0 ... 2-pipe, 1 ... 4-pipe)
reserved	29 MSB			
AO1	30 LSB 30 MSB	R, W, RAM	analogue output 1 (0..10 V)	value in %, range 0 .. 100%; same value as **PID output HEAT**
AO2	31 LSB 31 MSB	R, W, RAM	analogue output 2 (0..10 V)	value in %, range 0 .. 100%; same value as **PID output COOL**
pot correction FC020	32 LSB 32 MSB	R,W EEPROM	setpoint correction, adds to the value read at AI2	value / 100, 350 dec = 3.5 K

min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-3.5 °C, 0x015E)
max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (3.5 °C, 0x015E)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
temp sensor corr UC010	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the room unit sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
pot min	38 LSB 38 MSB	R,W EEPROM	lower setpoint limit for the potentiometer (AI2) in Ohm default: 40 Ohm, 0x0190	limit = value * 10 400 = 40 Ohm
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
pot max	40 LSB 40 MSB	R,W EEPROM	upper setpoint limit for the potentiometer (AI2) in Ohm default: 470 Ohm, 0x125C	limit = value * 10 4700 = 470 Ohm

show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1, temperature) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. = AI1 temperature at FC020 bit 2 … current time (default = temperature, 0x0001)
show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in 100 ms) of user inactivity to return from edit mode to show mode (default = 30 s)	
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = fan mode, 0x02)	0 ... push function inactive 1 ... presence mode 2 ... fan mode
change-over period	43 MSB	R,W EEPROM	wait time between heating and cooling modes after the C/O signal is received (default = 30 min, 0x1E)	in minutes, range 1 ... 255
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, fan mode 0x0201)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … fan mode bit 10 … time programme
presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)

fan mode edit mask	47 LSB 47 MSB	R,W EEPROM	states in fan mode that user is able to switch between (default = all, 0x001F)	bit 0 … Auto (fan + A) bit 1 … Man Off (fan + M) bit 2 … Man 1 (fan + M + Stage 1) bit 3 … Man 2 (fan + M + Stage 1,2) bit 4 ... Man 3 (fan + M + Stage 1,2,3)
display symbols	48 LSB 48 MSB	R, W, RAM	symbols that may be user-displayed on the UC010 LCD display NB: combination of spanner and alarm bell indicates communication error between FC020 and UC010	bit 0: spanner bit 1: boiler bit 2: alarm bell bit 3...bit 14: reserved
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table below; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
Range 1	53 LSB	R,W EEPROM	AI1 and AI2 range settings 1 – temperature (Pt1000) 2 – voltage (0...10 V) 3 – resistance (0...1600 Ohm) 4 – current (4...20 mA, a 120 Ohm external resistor necessary) 5 – resistance (0...5000 Ohm)	bits 0...3: AI1 bits 4...7: AI2 These settings are to be changed only if the FC020 is used as an I/O module. Values: see regs. **AI1** and **AI2** temperature is real value * 100 + 50 °C shift (20000dec = 150 °C) resistance 0....1600 Ohm is real value * 10 (16000dec = 1600 Ohm)
Range 2	53 MSB	R,W EEPROM	AI3 and AI4 range settings 1 – temperature (Pt1000) 2 – voltage (0...10 V) 3 – resistance (0...1600 Ohm) 4 – current (4...20 mA, a 120 Ohm external resistor necessary) 5 – resistance (0...5000 Ohm)	bits 0...3: AI3 bits 4...7: AI4 These settings are to be changed only if the FC020 is used as an I/O module. Values: see regs. **AI3** and **AI4** temperature is real value * 100 + 50 °C shift (20000dec = 150 °C) resistance 0....1600 Ohm is real value * 10 (16000dec = 1600 Ohm)

temp sensor corr. FC020	54 LSB 54 MSB	R,W EEPROM	Temp. sensor correction (Pt1000 at AI1) -20...20 K	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
auxiliary temp sensor corr. FC020	55 LSB 55 MSB	R,W EEPROM	Auxiliary temp. sensor correction (Pt1000 at AI4) -20...20 K	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
limitation temp. heat	56 LSB 56 MSB	R,W EEPROM	temperature for supply air limitation, upper limit, see controller settings 2. The AI4 (limitation sensor) measured value will not exceed the sum of actual room temperature and **limitation temp. heat.** Default = 10 K. (0x03E8)	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
limitation temp. cool	57 LSB 57 MSB	R,W EEPROM	temperature for supply air limitation, lower limit, see controller settings 2. The AI4 (limitation sensor) measured value will not drop below actual room temperature minus **limitation temp. cool.** Default = 6 K. (0x0258)	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual FC020 auxiliary temp.	58 LSB 58 MSB	R, RAM	actual value of aux. temp sensor at AI4 incl. correction (see **secondary temp sensor corr FC020**) This temperature is for information only and is not involved in the control process.	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
setpoint shift FC020	59 LSB 59 MSB	R, RAM	setpoint correction, as set at AI2 by a potentiometer. See **pot. correction** for limits.	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set fan mode FC020	60 LSB 60 MSB	R, RAM	fan status set by user over AI3 See register 148 for the resistor values for individual stages.	bit 0 … Auto bit 1 … Off bit 2 … Man 1 bit 3 … Man 2 bit 4 ... Man 3

modbus correction	61 LSB 61 MSB	R,W RAM	Correction temperature value set via Modbus map (it is used if register 29 LSB **controller settings 2** bit 3 is on). It is used instead of room unit potentiometer.	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
program Monday Event 1 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h)	e.g. 121 ... 2h 1min
program Monday Event 2 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h)	e.g. 121 ... 2h 1min
program Monday Event 3 value	67 LSB 67 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	68 LSB 68 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h)	e.g. 121 ... 2h 1min
program Monday Event 4 value	69 LSB 69 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 5 time	70 LSB 70 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	71 LSB 71 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled

program Monday Event 6 time	72 LSB 72 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
program Monday Event 6 value	73 LSB 73 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	74 LSB 74 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
AI1	146 LSB 146 MSB	R, RAM	AI1 value (control temperature sensor Pt1000)	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
AI2	147 LSB 147 MSB	R, RAM	AI2 value (setpoint shift potentiometer)	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
AI3	148 LSB 148 MSB	R, RAM	AI3 value (resistors to switch fan mode) 0...139 Ohm Off 140...224 Ohm Stage 1 225...329 Ohm Stage 2 330...389 Ohm Stage 3 > 390 Ohm Auto	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
AI4	149 LSB 149 MSB	R, RAM	AI4 value (auxiliary temperature sensor Pt1000)	Recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset

Real time table

Addr.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB		10xsecs				seconds			secs	00-59
14 MSB	0	10xmins				minutes			mins	00-59
15 LSB	0		10xhours	10xhours	hours				hours	00-23
15 MSB	0	0	0	0	0	day			day	01-07
16 LSB	0	0	10xdate		date				date	01-31
16 MSB	0	0	0	10xmonth	month				month	01-12
17 LSB	10xyear				year				year	00-99
17 MSB	0	0	0	0	0	0	0	0	not used	00

UC120 – room controller, heating or cooling, knob + RTC, 1xAO, 1xDI, RS485

- 60 words can be read at the same time (i.e. 120 bytes)
- whole range can be addressed bitwise

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0307hex
firmware	2 LSB 2 MSB	R	firmware version	81hex
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)
status MSB	3 MSB	R, RAM	module status upper byte **bit 0** 0: normal mode 1: init mode **bit 1** 1: at the next EEPROM write attempt will all data be written to EEPROM 0: at the next EEPROM write attempt will received data be written to RAM only **bit 2** – 1 – EEPROM initialized **bit 3** – N/A **bit 4** – 0 **bit 5** – 1 **bit 6** – 0 **bit 7** – commissioning mode (1 ... active)	
address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	!!! the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	communication 10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	!!! the change will be effective after restart only (however the register will be set immediately)
serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) !!! the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	

EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM writing cycles (EEPROM initialization does not reset register; no overflow)	
	7 LSB		reserved	
inputs	7 MSB	R, RAM	input states, binary heating / cooling demands. Inputs are physical states regardless of settings in the **input settings** register.	bit 0 ... DI1 bit 1 ... reserved bit 2 ... heating demand (PID output heat > 5%) bit 3 ... cooling demand (PID output cool > 5%)
PID output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100%
PID output COOL	8 MSB	R, RAM	cooling controller output	in %, range 0 .. 100%
	9 LSB 9 MSB	R, RAM	reserved	
manual control	10 LSB	R, W RAM	manual output control; if a bit is set to 1, the output goes to state defined below (see **manual heat output**); if set to 0, PID output values apply	bit 0 ... fan bit 1 ... heat output bit 2 ... cool output bit 3 to 4 ... reserved bit 5 ... change-over (1... C/O active)
	10 MSB		reserved	
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
	11 MSB		reserved	
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	R, W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual outside temp	22 LSB 22 MSB	R, W RAM	actual outside temperature, may be written to RAM optionally for display	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = comfort/day, 0x0001)	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when* **residential** bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when* **residential** bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
	24 LSB 24 MSB		reserved	
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then according to time schedule (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression
	25 MSB		reserved	

regulator settings	26 LSB	R,W EEPROM	controller configuration (defaults = residential, absolute, valve status, valve protection on, NC valves, correction reset, PI control, 0x53)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 –relative, 1 – absolute) bit 2 ... heating/cooling symbols display: 1 – media status according to the c/o signal, 0 – valve status) bit 3 ... reserved bit 4 ... valve exercising (1 – enabled) bit 5 ... valve polarity (0 – NC, 1 – NO) bit 6 ... temp corr. reset when control mode changes (0 ... no, 1 ... yes) bit 7 ... control mode (0 – PI, 1 – on/off)
input settings	26 MSB	R, W, EEPROM	input configuration DI1 – presence/window contact default: inputs enabled for control, active when on, 0x05	bit 0 ... DI1 enabled bit 1 ... reserved bit 2 ... DI1 sense (0: NC, 1: NO) bit 3 ... reserved
P band	27 LSB 27 MSB	R,W EEPROM	controller P-band (PI control mode) or hysteresis (on/off control mode)	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
	29 LSB 29 MSB		reserved	
	30 LSB 30 MSB		reserved	
	31 LSB 31 MSB		reserved	
	32 LSB 32 MSB		reserved	
min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-3.5 °C, 0x015E)

max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (3.5 °C, 0x015E)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
sensor corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
	38 LSB 38 MSB		reserved	
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
	40 LSB 40 MSB		reserved	
show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. bit 2 … current time (default = temperature, 0x0001)
show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	

quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = 0x02)	0 ... push function inactive 1 ... presence mode 2 ... fan mode
change over period	43 MSB	R,W EEPROM	time delay between heating and cooling mode (default 30 min; 0x1E)	in minutes; range 1-255
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, RTC time, presence mode, time programme 0x0581)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … reserved bit 10 … time programme
presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)
	47 LSB 47 MSB		reserved	
display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)

RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h)	e.g. 121 ... 2h 1min
program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min

program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset

Real time table

Addr.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB		10xsecs			seconds				secs	00-59
14 MSB	0	10xmins			minutes				mins	00-59
15 LSB	0		10xhours	10xhours	hours				hours	00-23
15 MSB	0	0	0	0	0	day			day	01-07
16 LSB	0	0	10xdate		date				date	01-31
16 MSB	0	0	0	10xmonth	month				month	01-12
17 LSB	10xyear				year				year	00-99
17 MSB	0	0	0	0	0	0	0	0	not used	00

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. In the commissioning mode, all Modbus data are read-only.

UC210 – room controller, heating with C/O and Jaga radiator, knob+ RTC, 2xDO, 2xDI, RS485

- 60 words can be read or written at the same time (i.e. 120 bytes)
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0303hex
firmware	2 LSB 2 MSB	R	firmware version	84hex
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 1** – SW reset enable **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)

status MSB	3 MSB	R, RAM	module status upper byte
			bit 0 0: normal mode
			         1: init mode
			bit 1 1: at the next EEPROM write attempt will all data be written to EEPROM
			         0: at the next EEPROM write attempt will received data be written to RAM only
			bit 2 – 1 – EEPROM initialized
			bit 3 – N/A
			bit 4 – SW reset enabled
			bit 5 – 1
			bit 6 – 0
			bit 7 – commissioning mode (1...active)
				SW reset enabled: see reg. 3 LSB bit 1, reg. 1002.

address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	!!! the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	communication 10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	!!! the change will be effective after restart only (however the register will be set immediately)
serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) !!! the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	

EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM writing cycles, does not overflow, cannot be reset by INIT nor by any other means	
relay	7 LSB	R, RAM	output relay status (DO2)	bit 0 ... reserved (relay 1: fast PWM fan control output) bit 1 ... relay 2, heating (or cooling when C/O)
inputs	7 MSB	R, RAM	input states, binary heating / cooling demands. DI1 and DI2 are physical input states regardless of the **inputs settings** setting.	bit 0 ... DI1 bit 1 ... DI2 bit 2 ... heating demand (PID output heat > 5%) bit 3 ... cooling demand (PID output cool > 5%)
PID output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100%
PID output COOL	8 MSB	R, RAM	cooling controller output in the change-over mode	in %, range 0 .. 100%
PID fan stage	9 LSB	R, RAM	fan speed displayed on the LCD	0 ... off 1 ... stage 1 2 ... stage 2 3 ... stage 3
PID fan speed	9 MSB	R, RAM	fan speed	in %, range 0 .. 100%
manual control	10 LSB	R, W RAM	manual output control; if a bit is set to 1, the output goes to state defined below (see **manual heat output**); if set to 0, PID output values apply	bit 0 ... fan bit 1 ... heat output bit 2 to 4 ... reserved bit 5 ... change-over (1... C/O active)
manual fan stage	10 MSB	R, W RAM	manual fan stage setting (only if the corresponding bit in the **manual control** register is set)	0 ... off 1 ... stage 1 2 ... stage 2 3 ... stage 3
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
	11 MSB	R, W RAM	reserved	
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	R, W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual outside temp	22 LSB 22 MSB	R, W RAM	actual outside temperature, may be written to RAM optionally for display	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **controller settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = comfort/day, 0x0001)	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when residential* bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when residential* bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
set fan mode	24 LSB 24 MSB	R,W EEPROM	fan mode set by user (default = auto, 0x0001)	bit 0 … Auto (fan + A) bit 1 … Off (fan + M) bit 2 … Man 1 (fan + M + Stage1) bit 3 … Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1,2 and 3) bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then according to time schedule (displayed symbols depend on the configuration register **controller settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression

	25 MSB		reserved	
controller settings	26 LSB	R,W EEPROM	controller configuration (defaults = residential, absolute, valve status, Jaga v2, valve protection on, NC valves, correction reset, PI control, 0x5B)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 –relative, 1 – absolute) bit 2 ... heating/cooling symbols display: 1 – media status according to the c/o signal, 0 – valve status) bit 3 ... 0: Jaga DBE, 1: Jaga CC (extension module with output is needed) bit 4 ... valve exercising (1 – enabled) bit 5 ... valve polarity (0 – NC, 1 – NO) bit 6 ... temp corr. reset when control mode changes (0 ... no, 1 ... yes) bit 7 ... control mode (0 – PI, 1 – on/off)
input settings	26 MSB	R, W, EEPROM	input configuration DI1 – presence DI2 – window contact default: inputs enabled for control, active when on, 0x0F	bit 0 ... DI1 enabled bit 1 ... DI2 enabled bit 2 ... DI1 sense (0: NC, 1: NO) bit 3 ... DI2 sense (0: NC, 1: NO)
P band	27 LSB 27 MSB	R,W EEPROM	**controller P-band** (input deviation for output proportional part of 100 %) or **hysteresis if On/Off** (hysteresis for heating is under the setpoint, for cooling above the set-point)	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
controller settings 2	29 LSB	R,W EEPROM	controller configuration 2	bit 0 ... fan stage reset to Auto after time scheduler change enable bit 1 to 5 … reserved bit 6 … C/O inversed
	29 MSB		reserved	
	30 LSB 30 MSB		reserved	
	31 LSB 31 MSB		reserved	
	32 LSB 32 MSB		reserved	

min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-5 °C, 0x01F4)
max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (5 °C, 0x01F4)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
sensor corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
	38 LSB 38 MSB		reserved	
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
	40 LSB 40 MSB		reserved	
show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. bit 2 … current time (default = temperature, 0x0001)

show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = 0x02; fan mode)	0 ... push function inactive 1 ... presence mode 2 ... fan mode
change over period	43 MSB	R,W EEPROM	time delay when changing from heating to cooling and back (default = 30 min; 0x1E)	in mins, 1 to 255
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, RTC time, presence mode, fan mode, time programme 0x0781)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … fan mode bit 10 … time programme
presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)
fan mode edit mask	47 LSB 47 MSB	R,W EEPROM	fan states that user is able to switch between (default = all, 0x001F)	bit 0 … Auto (fan + A) bit 1 … Off (fan + M) bit 2 … Man 1 (fan + M + Stage1) bit 3 … Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1, 2 and 3)

display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0, 0x0000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h, 0x01E0)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1, 0x0001)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h, 0x0348)	e.g. 121 ... 2h 1min
program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0, 0x0000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h, 0x0528)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1, 0x0001)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled

program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset
reset	1002 LSB 1002 MSB	W, RAM	reset device	The device resets if reset is enabled (see reg. 3), and a non-zero value is written to this register.

Real time table

Addr.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function
14 LSB		10xsecs			seconds				secs
14 MSB	0	10xmins			minutes				mins
15 LSB	0		10xhours	10xhours	hours				hours
15 MSB	0	0	0	0	0	day			day
16 LSB	0	0	10xdate		date				date
16 MSB	0	0	0	10xmonth	month				month
17 LSB		10xyear			year				year
17 MSB	0	0	0	0	0	0	0	0	not used

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. In the commissioning mode, all Modbus data are read-only.

UC211 – room controller, heating and cooling - Jaga radiator, knob+ RTC, 3xDO, 1xDI, RS485

- 60 words can be read or written at the same time (i.e. 120 bytes)
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0303hex
firmware	2 LSB 2 MSB	R	firmware version	84hex
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 1** – SW reset enable **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)
status MSB	3 MSB	R, RAM	module status upper byte **bit 0** 0: normal mode 1: init mode **bit 1** 1: at the next EEPROM write attempt will all data be written to EEPROM 0: at the next EEPROM write attempt will received data be written to RAM only **bit 2** – 1 – EEPROM initialized **bit 3** – N/A **bit 4** – SW reset enabled **bit 5** – 1 **bit 6** – 0 **bit 7** – commissioning mode (1...active)	SW reset enabled: see reg. 3 LSB bit 1, reg. 1002.
address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	**!!!** the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	communication 10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	**!!!** the change will be effective after restart only (however the register will be set immediately)
serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) **!!!** the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	

EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM writing cycles, does not overflow, cannot be reset by INIT nor by any other means	
relay	7 LSB	R, RAM	output relay status	bit 0 ... reserved (relay 1: fast PWM fan control output) bit 1 ... relay 2, heating bit 2 … relay 3, cooling
input	7 MSB	R, RAM	input states, binary heating / cooling demands. DI1 is physical input states regardless of the **input settings** setting.	bit 0 ... DI1 bit 1 ... reserved bit 2 ... heating demand (PID output heat > 5%) bit 3 ... cooling demand (PID output cool > 5%)
PID output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100%
PID output COOL	8 MSB	R, RAM	cooling controller output in the change-over mode	in %, range 0 .. 100%
PID fan stage	9 LSB	R, RAM	fan speed displayed on the LCD	0 ... off 1 ... stage 1 2 ... stage 2 3 ... stage 3
PID fan speed	9 MSB	R, RAM	fan speed	in %, range 0 .. 100%
manual control	10 LSB	R, W RAM	manual output control; if a bit is set to 1, the output goes to state defined below (see **manual heat output**); if set to 0, PID output values apply	bit 0 ... fan bit 1 ... heat output bit 2 … cool ouput bit 3 to 5 ... reserved
manual fan stage	10 MSB	R, W RAM	manual fan stage setting (only if the corresponding bit in the **manual control** register is set)	0 ... off 1 ... stage 1 2 ... stage 2 3 ... stage 3
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
manual cool output	11 MSB	R, W RAM	manual cool output setting (only if the corresponding bit in the **manual control** register is set)	
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	R, W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual outside temp	22 LSB 22 MSB	R, W RAM	actual outside temperature, may be written to RAM optionally for display	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **controller settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = comfort/day, 0x0001)	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when residential* bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when residential* bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
set fan mode	24 LSB 24 MSB	R,W EEPROM	fan mode set by user (default = auto, 0x0001)	bit 0 … Auto (fan + A) bit 1 … Off (fan + M) bit 2 … Man 1 (fan + M + Stage1) bit 3 … Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1, 2 and 3) bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then according to time schedule (displayed symbols depend on the configuration register **controller settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression

	25 MSB		reserved	
controller settings	26 LSB	R,W EEPROM	controller configuration (defaults = residential, absolute, valve status, Jaga v2, valve protection on, NC valves, correction reset, PI control, 0x5B)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 –relative, 1 – absolute) bit 2 ... heating/cooling symbols display: 1 – media status according to the c/o signal, 0 – valve status) bit 3 ... 0: Jaga DBE, 1: Jaga CC (extension module with output is needed) bit 4 ... valve exercising (1 – enabled) bit 5 ... valve polarity (0 – NC, 1 – NO) bit 6 ... temp corr. reset when control mode changes (0 ... no, 1 ... yes) bit 7 ... control mode (0 – PI, 1 – on/off)
input settings	26 MSB	R, W, EEPROM	input configuration DI1 – presence/window contact (input function see controller settings 2) default: inputs enabled for control, active when on, 0x05	bit 0 ... DI1 enabled bit 1 ... reserved bit 2 ... DI1 sense (0: NC, 1: NO) bit 3 ... reserved
P band	27 LSB 27 MSB	R,W EEPROM	**controller P-band** (input deviation for output proportional part of 100 %) or **hysteresis if On/Off** (hysteresis for heating is under the setpoint, for cooling above the set-point)	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
controller settings 2	29 LSB	R,W EEPROM	controller configuration 2	bit 0 ... fan stage reset to Auto after time scheduler change enable bit 1 to 2 … reserved bit 3 … DI1 function (0 – presence, 1 – window contact)
	29 MSB		reserved	
	30 LSB 30 MSB		reserved	
	31 LSB 31 MSB		reserved	

	32 LSB 32 MSB		reserved	
min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-5 °C, 0x01F4)
max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (5 °C, 0x01F4)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
sensor corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
	38 LSB 38 MSB		reserved	
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
	40 LSB 40 MSB		reserved	
show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. bit 2 … current time (default = temperature, 0x0001)

show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = 0x02; fan mode)	0 ... push function inactive 1 ... presence mode 2 ... fan mode
	43 MSB		reserved	
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, RTC time, presence mode, fan mode, time programme 0x0781)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … fan mode bit 10 … time programme
presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)
fan mode edit mask	47 LSB 47 MSB	R,W EEPROM	fan states that user is able to switch between (default = all, 0x001F)	bit 0 … Auto (fan + A) bit 1 … Off (fan + M) bit 2 … Man 1 (fan + M + Stage1) bit 3 … Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1, 2 and 3)

display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0, 0x0000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h, 0x01E0)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1, 0x0001)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h, 0x0348)	e.g. 121 ... 2h 1min
program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0, 0x0000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h, 0x0528)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1, 0x0001)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled

program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset
reset	1002 LSB 1002 MSB	W, RAM	reset device	The device resets if reset is enabled (see reg. 3), and a non-zero value is written to this register.

Real time table

Addr.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function
14 LSB		10xsecs			seconds				secs
14 MSB	0	10xmins			minutes				mins
15 LSB	0		10xhours	10xhours	hours				hours
15 MSB	0	0	0	0	0	day			day
16 LSB	0	0	10xdate		date				date
16 MSB	0	0	0	10xmonth	month				month
17 LSB		10xyear			year				year
17 MSB	0	0	0	0	0	0	0	0	not used

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. Inthe commissioning mode, all Modbus data are read-only.

UC220 – room controller, heating and cooling, knob + RTC, 2xAO, 2xDI, RS485

- 60 words can be read or written at the same time (i.e. 120 bytes)
- whole range can be addressed bitwise
- the whole memory is mirrored as read-only from address 0x101 (e.g. 257 dec)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0308hex
firmware	2 LSB 2 MSB	R	firmware version	
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)
status MSB	3 MSB	R, RAM	module status upper byte **bit 0** 0: normal mode 1: init mode **bit 1** 1: at the next EEPROM write attempt will all data be written to EEPROM 0: at the next EEPROM write attempt will all data be written to RAM only **bit 2** – 1 – EEPROM initialized **bit 3** – N/A **bit 4** – 0 **bit 5** – 1 **bit 6** – 0 **bit 7** – commissioning mode (1 ... active)	
address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	**!!!** the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	communication 10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	**!!!** the change will be effective after restart only (however the register will be set immediately)
serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) **!!!** the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	

EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM write cycles (EEPROM initialization does not reset register, no overflow)	
	7 LSB		reserved	
inputs	7 MSB	R, RAM	input states, binary heating / cooling demands. Inputs are physical states regardless of settings in the **input settings** register.	bit 0 ... DI1 bit 1 ... DI2 bit 2 ... heating demand (PID output heat > 5%) bit 3 ... cooling demand (PID output cool > 5%)
PID output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100%
PID output COOL	8 MSB	R, RAM	cooling controller output	in %, range 0 .. 100%
	9 LSB	R, RAM	reserved	
	9 MSB	R, RAM	reserved	
manual control	10 LSB	R, W RAM	manual output control; if a bit is set to 1, the output goes to state defined below (see **manual heat/cool output**); if set to 0, PID output values apply	bit 0 ... fan bit 1 ... heat output bit 2 ... cool output bit 3 to 4 ... reserved bit 5 ... change-over (1... C/O active)
	10 MSB		reserved	
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
manual cool output	11 MSB	R, W RAM	manual cool output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	R, W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual outside temp	22 LSB 22 MSB	R, W RAM	actual outside temperature, may be written to RAM optionally for display	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = standby/night, 0x0002)	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when* **residential** bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when* **residential** bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
	24 LSB 24 MSB		reserved	
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then according to time schedule (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression
	25 MSB		reserved	
regulator settings	26 LSB	R,W EEPROM	controller configuration (defaults = hotel, relative, valve status, valve protection on, NC valves, correction reset, PI control, 0x50)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 –relative, 1 – absolute) bit 2 nad 3 ... reserved bit 4 ... valve exercising (1 – enabled) bit 5 ... valve polarity (0 – NC, 1 – NO) bit 6 ... temp corr. reset when control mode changes (0 ... no, 1 ... yes) bit 7 ... control mode (0 – PI, 1 – on/off)

input settings	26 MSB	R, W, EEPROM	input configuration DI1 – presence DI2 – window contact default: inputs enabled for control, active when on, 0x0F	bit 0 ... DI1 enabled bit 1 ... DI2 enabled bit 2 ... DI1 sense (0: NC, 1: NO) bit 3 ... DI2 sense (0: NC, 1: NO)
P band/ On-Off hysteresis	27 LSB 27 MSB	R,W EEPROM	**controller P-band** (input deviation for output proportional part of 100 %) or **hysteresis if On/Off** (hysteresis for heating is under the setpoint, for cooling above the set-point)	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
	29 LSB		reserved	
	29 MSB		reserved	
	30 LSB 30 MSB		reserved	
	31 LSB 31 MSB		reserved	
	32 LSB 32 MSB		reserved	
min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-3.5 °C, 0x015E)
max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (3.5 °C, 0x015E)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex	
sensor corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex	
	38 LSB 38 MSB		reserved		
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.	
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes	
	40 LSB 40 MSB		reserved		
show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. bit 2 … current time (default = temperature, 0x0001)	
show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**	
edit return time	42 MSB	R,W EEPROM	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)		
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = 0x02)	0 ... push function inactive 1 ... presence mode 2 ... fan mode	
	43 MSB		reserved		
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode	
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings	

allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, 0x0001)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … reserved bit 10 … time programme
presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)
	47 LSB 47 MSB		reserved	
display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled

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program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h)	e.g. 121 ... 2h 1min
program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
...	...	...	...	...

program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset

Real time table

Addr.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB		10xsecs			seconds				secs	00-59
14 MSB	0	10xmins			minutes				mins	00-59
15 LSB	0		10xhours	10xhours	hours				hours	00-23
15 MSB	0	0	0	0	0	day			day	01-07
16 LSB	0	0	10xdate		date				date	01-31
16 MSB	0	0	0	10xmonth	month				month	01-12
17 LSB	10xyear				year				year	00-99
17 MSB	0	0	0	0	0	0	0	0	not used	00

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. Inthe commissioning mode, all Modbus data are read-only.

US100 – room and blinds controller, 5 buttons + RTC, 3xDO, 1xDI, RS485

- 60 words can be read or written at the same time (i.e. 120 bytes)
- the whole memory range is mirrored as read-only from address 0x101 (address 257 refers to address 1 etc.)

name	address	type	description	notes / defaults
module ID	1 LSB 1 MSB	R	module type identification	0305hex
firmware	2 LSB 2 MSB	R	firmware version	
status LSB	3 LSB	R, W RAM	module status lower byte **bit 0** – write to EEPROM enabled **bit 4** – init EEPROM	**Init EEPROM** follows if the INIT switch was ON at power up, and if INIT switch was OFF at setting bit 4 to 1 (indicated by bit 2 in Status MSB)
status MSB	3 MSB	R, RAM	module status upper byte **bit 0** 0: normal mode 1: init mode **bit 1** 1: at the next EEPROM write attempt will all data be written to EEPROM 0: at the next EEPROM write attempt will received data be written to RAM only **bit 2** – 1 – EEPROM initialized **bit 3** – N/A **bit 4** – 0 **bit 5** – 1 **bit 6** – 0 **bit 7** – commissioning mode (1...active)	
address	4 LSB	R,W EEPROM	Modbus module address (default = 1)	!!! the change will be effective after restart only (however the register will be set immediately)
baud rate	4 MSB	R,W EEPROM	communication speed 10dec … 1 200 bps 11dec … 2 400 bps 12dec … 4 800 bps 13dec … 9 600 bps (default) 14dec … 19 200 bps 15dec … 38 400 bps 16dec … 57 600 bps 17dec … 115 200 bps	!!! the change will be effective after restart only (however the register will be set immediately)
serial port settings	5 LSB	R,W EEPROM	serial line parameter settings (default = no parity, 1 stop bit)	bit 0-1 ... parity (00 – no parity, 01 – even, 10 – odd) bit 2 ... stop bits (0 – one, 1 - two) !!! the change will be effective after restart only (however the register will be set immediately)
	5 MSB		reserved	

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EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM write cycles (EEPROM initialization does not reset register, no overflow)	
relay	7 LSB	R, RAM	output relay status (DO1 to DO3)	bit 0 ... DO 1, heating bit 1 ... DO 2, blinds up bit 2 ... DO 3, blinds down
inputs	7 MSB	R, RAM	input status (physical signals, regardless of the **inputs settings** register configuration)	bit 0 ... DI1 bit 1 ... reserved bit 2 ... heating demand (PID output heat > 5%) bit 3 ... ... cooling demand (PID output cool > 5%)
pid output HEAT	8 LSB	R, RAM	heating controller output	in %, range 0 .. 100%
pid output COOL	8 MSB	R, RAM	cooling controller output in the change-over mode	in %, range 0 .. 100%
actual position	9 LSB	R, RAM	actual position of the blinds (when blinds move, update after 1 s)	in %, 0...100 %
	9 MSB		reserved	
manual control	10 LSB	R, W RAM	manual output control; if a bit is set to 1, the output goes to state defined below (see **manual heat output**); if set to 0, PID output values apply. When blinds are on manual, no user command (buttons) is accepted.	bit 0 ... reserved bit 1 ... heat output bit 2 – 4 reserved bit 5 ... change over (1 = c/o active) bit 6 ... blinds
	10 MSB	R, W RAM	reserved	
manual heat output	11 LSB	R, W RAM	manual heat output setting (only if the corresponding bit in the **manual control** register is set)	in %, range 0 .. 100%
position command	11 MSB	R, W, RAM	manual blinds settings, the action is performed only at value change (and if enabled in **manual control**)	in %, 0...100 % (0% - blinds up, 100% - blinds down)
set temp correction	12 LSB 12 MSB	R, W RAM	setpoint correction set by user; resets at each operation mode change 3.5°C reads 350 (limits are set in the **min** and **max rel. temp correction** registers)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp set point COOL	14 LSB 14 MSB	R, RAM	actual cooling setpoint incl. setpoint correction (reg. 12)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user (default = 21°C, 0x0834)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort heating temp	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint set by user (default = 19°C, 0x076C)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy heating temp	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	R,W EEPROM	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	R,W EEPROM	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	R, W EEPROM	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by the internal sensor incl. correction (see **corr temp**)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

actual outside temp	22 LSB 22 MSB	R, W RAM	actual outside temperature, may be written to RAM optionally for display	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
set presence mode	23 LSB 23 MSB	R,W EEPROM	presence status set by user (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party) (default = comfort/day, 0x0001)	bit 0 … comfort (occupied house) *or* day (sun + occupied house) bit 1 … standby (empty house) *or* night (moon + occupied house) bit 2 … off (off) *or* depression (empty house) bit 3 … auto (clock) – *only when* ***residential*** bit 4 … party (sun + drink + clock, after 2h goes to auto) – *only when* ***residential*** bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
	24 LSB 24 MSB		reserved	
actual control mode	25 LSB	R, RAM	actual mode used for control, if on **manual** then the **actual control mode** is equal to **set presence mode**, if on **auto** then according to time schedule (displayed symbols depend on the configuration register **regulator settings,** if set to **hotel** then comfort, standby, off; if set to **residential** then day, night, depression, auto, party)	bit 0 … comfort/day bit 1 … standby/night bit 2 … off/depression
	25 MSB		reserved	

regulator settings	26 LSB	R,W EEPROM	controller configuration (defaults = residential, absolute, valve status, valve protection on, NC valves, correction reset, PI control, 0x53)	bit 0 ... presence mode type (0 – hotel, 1 - residential) bit 1 … temperature correction display (0 –relative, 1 – absolute) bit 2 ... heating/cooling symbols display: 1 – media status according to the c/o signal, 0 – valve status) bit 3 ... reserved bit 4 ... valve exercising (1 – enabled) bit 5 ... valve polarity (0 – NC, 1 – NO) bit 6 ... temp. correction reset when control mode (reg. 25 LSB) changes bit 7 ... control mode (0 – PI, 1 – on/off)
input settings	26 MSB	R,W EEPROM	configuration of input DI1 ... presence / window contact (functions see **controller settings 2**) (defaults = enabled, active when on, 0x05)	bit 0 ... DI1 enable bit 1 ... reserved bit 2 ... input sense (0-NC, 1-NO) bit 3 ... reserved
P band / On-Off hysteresis	27 LSB 27 MSB	R,W EEPROM	**controller P-band** (input deviation for output proportional part of 100 %) or **hysteresis if On/Off** (hysteresis for heating is under the setpoint, for cooling above the set-point)	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB	R,W EEPROM	controller I – constant; if out of bounds, a new recalculated value is set after restart	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)
controller settings 2	29 LSB	R,W EEPROM	blinds configuration (default: no action, window, C/O normal, 0x08)	bit 0... reserved bits 1 to 2... command after restart (0 – no action, 1 – up, 2 – down) bit 3 ... DI1 function (0 – presence, 1 window) bit 4 to 5 … reserved bit 6 … C/O inverse
rotation time	29 MSB	R,W EEPROM	time for rotating the blinds by 180 ° (default: 1.2 s, 0x0C)	in 0.1 s

whole position time	30 LSB	R, W, EEPROM	time of transit time between Up and Down positions (default: 70 s, 0x46)	in secs, 1...255
switch short time	30 MSB	R, W, EEPROM	time to distinguish between short and long push for blinds control (short: rotation by **move short time**, long – transit to end position) (default: 0.5 s, 0x05)	in 0.1 s
move short time	31 LSB	R, W, EEPROM	time to rotate the blinds when short push (default: 0.2 s, 0x02)	in 0.1 s, 1...25.5 s
waiting time up/down	31 MSB	R, W, EEPROM	pause time between up and down direction change – to protect the motors (default: 0.7 s, 0x07)	in 0.1 s, 0.6 ... 3.0 s
	32 LSB 32 MSB		reserved	
min rel. temp correction	33 LSB 33 MSB	R,W EEPROM	minimum relative user temperature correction, a positive value is saved and is taken as negative limit	recalculate: minimum correction = -(read value/100); -10.00 … 1000 (-3.5 °C, 0x015E)
max rel. temp correction	34 LSB 34 MSB	R,W EEPROM	maximum relative user temperature correction	recalculate: maximum correction = (read value/100); 10.00 … 1000 (3.5 °C, 0x015E)
min day, night, depression temp	35 LSB 35 MSB	R,W EEPROM	minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
max day, night, depression temp	36 LSB 36 MSB	R,W EEPROM	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex
sensor corr temp	37 LSB 37 MSB	R,W EEPROM	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 … 0 199.99 … 19999 -0.01 … 0FFFFhex -199.99 … 0B1E1hex

	38 LSB 38 MSB		reserved	
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting (default = 0.5 °C, 0x32)	step = read value / 100 1 … 0.01 50 … 0.5 100 … 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
	40 LSB 40 MSB		reserved	
show mode	41 LSB 41 MSB	R,W EEPROM	data that roll on the LCD display (default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after **show time**.	bit 0 … temperature bit 1 … outside temp. bit 2 … current time (default = temperature, 0x0001)
show time	42 LSB	R,W EEPROM	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see **show mode**
edit return time	42 MSB	R,W EEPROM	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	
quick edit mode number	43 LSB	R,W EEPROM	number of mode which is editable through quick edit menu (short push of the knob) (default = 0x01)	0 ... push function inactive 1 ... presence mode 2 ... reserved
change over period	43 MSB	R,W EEPROM	time delay when changing from heating to cooling and back (default = 30)	in mins, 1 to 255
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu) (default = 1.5 s, 0x0F)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu) (default = 5 s, 0x32)	for actual time and basic setpoints settings
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	settings that user is able to perform 0 … disabled 1 … enabled (default = temp corr, RTC time, presence mode, time programme 0x0581)	bit 0 … temp corr. bit 1 … heating day temp bit 2 … heating night temp bit 3 … heating depression temp bit 4 … cooling day temp bit 5 … cooling night temp bit 6 … cooling depression temp bit 7 … RTC time bit 8 … presence mode bit 9 … reserved bit 10 … time programme

presence mode edit mask	46 LSB 46 MSB	R,W EEPROM	states in presence mode that user is able to switch between (default = all, 0x001F)	bit 0 … day (sun + occupied house) bit 1 … night (moon + occupied house) bit 2 … depression (empty house) bit 3 … auto (clock) bit 4 … party (sun + drink + clock, after 2h goes to auto)
	47 LSB 47 MSB		reserved	
display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 … spanner bit 1 … boiler bit 2 … alarm bell bit 3 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R,W EEPROM	Real time clock (not subject to INIT command)	see table; to write to those registers, write to EEPROM must be enabled in the **status LSB** register
	53 LSB 53 MSB		reserved	
program Monday Event 1 time	54 LSB 54 MSB	R,W EEPROM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 2 time	56 LSB 56 MSB	R,W EEPROM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight) (default = 08:00 h)	e.g. 121 ... 2h 1min
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 3 time	58 LSB 58 MSB	R,W EEPROM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight) (default = 14:00 h)	e.g. 121 ... 2h 1min

program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value (default = 0)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight) (default = 22:00 h)	e.g. 121 ... 2h 1min
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value (default = 1)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 5 time	62 LSB 62 MSB	R,W EEPROM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value (default = disabled, 0x8000)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
program Tuesday Event 1 time	66 LSB 66 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h)	e.g. 121 ... 2h 1min
...	...	...	...	...
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
uptime	1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset

domat
control system

reset	1002 LSB 1002 MSB	W, RAM	reset device	The device resets if reset is enabled (see reg. 3), and a non-zero value is written to this register.

Real time table

Addr.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB		10xsecs			seconds				secs	00-59
14 MSB	0	10xmins			minutes				mins	00-59
15 LSB	0		10xhours	10xhours	hours				hours	00-23
15 MSB	0	0	0	0	0	day			day	01-07
16 LSB	0	0	10xdate		date				date	01-31
16 MSB	0	0	0	10xmonth	month				month	01-12
17 LSB	10xyear				year				year	00-99
17 MSB	0	0	0	0	0	0	0	0	not used	00

Commissioning mode: when powered on with pushbutton pushed, after several seconds the commissioning mode is activated with manual control over outputs and indication of inputs. After 10 mins after last push or after reboot the controller goes to normal (control) mode. Inthe commissioning mode, all Modbus data are read-only.