

Room units and controllers

Communication protocol description









V4

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RS485	127



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 Ul010:

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**.



Ulxxx, UXxxx Room unit

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V4

Ulxxx - 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	R	module type identification	
	1 MSB		UI5xx:	UI0xx:
			UI 511 -> 0601hex	
			UI 512 -> 0602hex	UI 010 -> 0200hex
			UI 520 -> 0620hex	UI 011 -> 0201hex
			UI 541 -> 0641hex	UI 012 -> 0202hex
			UI 542 -> 0642hex	UI 020 -> 0220hex
			UI 545 -> 0645hex	UI 041 -> 0241hex
				UI 042 -> 0242hex
			UI 551 -> 0651hex	UI 045 -> 0245hex
			UI 552 -> 0652hex	
			UI 555 -> 0655hex	UI 051 -> 0251hex
			UI 561 -> 0661hex	UI 052 -> 0252hex
			UI 562 -> 0662hex	UI 055 -> 0255hex
			UI 565 -> 0665hex	UI 061 -> 0261hex
			Of 303 - Goodilex	UI 062 -> 0262hex
			UI 571 -> 0671hex	UI 065 -> 0265hex
				OT 000 -> 0200HEX
			UI 572 -> 0672hex	111.074 > 0074bov
			UI 575 -> 0675hex	UI 071 -> 0271hex
			UI 581 -> 0681hex	UI 072 -> 0272hex
			UI 582 -> 0682hex	UI 075 -> 0275hex
			UI 585 -> 0685hex	UI 081 -> 0281hex
			UI 590 -> 0690hex	UI 082 -> 0282hex
				UI 085 -> 0285hex
			UI6xx:	
				UI09x:
			UI 611 -> 0701hex	
			UI 612 -> 0702hex	UI 091 -> 0291hex
			UI 620 -> 0720hex	UI 092 -> 0292hex
			UI 641 -> 0741hex	UI 093 -> 0293hex
			UI 642 -> 0742hex	UI 094 -> 0294hex
			UI 645 -> 0745hex	UI 095 -> 0295hex
			LU 651 > 0751box	HV0vv
			UI 651 -> 0751hex	UX0xx:
			UI 652 -> 0752hex	LIV 044 > 40045
			UI 655 -> 0755hex	UX 011 -> 1201hex
			UI 661 -> 0761hex	UX 015 -> 1220hex
			UI 662 -> 0762hex	UX 041 -> 1241hex
			UI 665 -> 0765hex	UX 045 -> 1245hex
			UI 671 -> 0771hex	
			UI 672 -> 0772hex	
			UI 675 -> 0775hex	
			UI 681 -> 0781hex	
			UI 682 -> 0782hex	
			UI 685 -> 0785hex	
			UI 690 -> 0790hex	
		1		



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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 46	for UX and	d 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	,



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Register 6 for	UI09x (unit	s with CO2 sense	or)	
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)	
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 U	JIO (except for l		,
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 a	nd UI6 (Ethern	et)	
uptime	4 LSB 4 MSB 5 LSB 5 MSB	R	uptime (s)	
firmware 2	6 LSB 6 MSB	R	Ethernet processor firmware version	
Common regi	sters 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	multistate scheduler: 0x01, 0x02, 0x04 (presence / day/night mode) 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.	



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	40 1 00	T.D.	and a devit of digital in mate (DIA, DIO	Lit O DI 4
inputs	10 LSB	R	readout of digital inputs (DI1, DI2,	bit 0 DI 1
			PUSH)	bit 1 DI 2
	40.1400	-		bit 2 PUSH button
latched values	10 MSB	R	catched values	bit 0 DI 1
			0 – since latch enable there was no	bit 1 DI 2
			change on the bit	bit 2 PUSH button; to
			1 - since latch enable the bit value	reset the bits, disable and
			has changed its state	enable latch - see latch
				enable
set temp	11 LSB	R,W	temperature set by user	recalculate:
	11 MSB	EEPROM	(UI09x temperature setpoint value	set temperature =
			for thermostat function)	read value / 100
			e.g. 21.5°C reads 2150	
				0 0
			(default = 23 °C; 0x08FC)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set day	12 LSB	R,W	day mode temperature setpoint	recalculate:
/comfort temp	12 MSB	EEPROM	set by user (when editing, the	set temperature =
			symbols thermometer and sun are	read value / 100
			active)	
				0 0
			(default = 23 °C; 0x08FC)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set night /	13 LSB	R,W	night mode temperature setpoint	recalculate:
precomfort	13 MSB	EEPROM	set by user (when editing, the	set temperature =
temp			symbols thermometer and moon	read value / 100
			are active)	
				0 0
			(default = 18 °C, 0x0708)	199.99 19999
			,	-0.01 0FFFFhex
				-199.99 0B1E1hex
set outside	14 LSB	R,W	set outside temperature (at which	recalculate:
/depression	14 MSB	EEPROM	heating may be enabled), step and	set temperature =
temp			resolution is fixed to 1 °C (when	read value / 100
			editing, the symbols thermometer	
			and house are active)	0 0
			,	199.99 19999
			(default = 15 °C, 0x05DC)	-0.01 0FFFFhex
			,	-199.99 0B1E1hex
set DHW	15 LSB	R,W	DHW setpoint temperature, step	recalculate:
temp	15 MSB	EEPROM	and resolution is fixed to 1 °C (when	set temperature =
r r			editing, the symbols <i>thermometer</i>	read value / 100
			and water tap are active)	
				0 0
			(default = 50 °C, 0x1388)	199.99 19999
			(322227	-0.01 0FFFFhex
				-199.99 0B1E1hex
set heating	16 LSB	R,W	heating curve type set by user	set value = 1 4
curve		EEPROM	(when editing, the symbols <i>heating</i>	
			and <i>boiler</i> are active)	
			(default = 1)	
	16 MSB		reserved	
			. 555. 155	



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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.)



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	T	T =	T =	1
set fan mode	21 LSB	R,W EEPROM	fan mode set by user (for fancoils, convectors, AHUs)	bit 0 Auto (fan + A) bit 1 Man Off (fan + M)
			(,,,,,,	bit 2 Man 1 (fan + M +
			The register is to be set by 16 bit	Stage 1)
			writing command.	bit 3 Man 2 (fan + M +
				Stage 1,2)
			(default = 0x00)	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
	04.1405	D.M.		disabled.)
set heat/cool	21 MSB	R,W	heat/cool mode set by user	bit 0 off (Off)
mode		EEPROM	(for split units, heat pumps etc.)	bit 1 heat only (Heat) bit 2 cool only (Cool)
			The disable writing bit may be	bit 3 fan only (Fan)
			used to write selectively (only when	bit 4 auto (Heat + Cool)
			the presence mode value changes)	bit 5 to 6 reserved
			as EEPROM is not suitable for	bit 7 disable writing
			permanent writing. This bit is not	(0 – value will be written to
			written to the register.	EEPROM, 1 – writing
				disabled.)
			The register is to be set by 16 bit	
			writing command.	
set user	22 LSB	R,W	state of user defined mode (for	bit 0 user_1_pattern
pattern mode		EEPROM	each mode, the complete symbol	bit 1 user_2_pattern
			set may be redefined) – see user	bit 2 user_3_pattern
			pattern x symbols x, writing must	bit 3 user_4_pattern
			follow by a 16-bit command	bit 4 user_5_pattern
				bit 56 reserved
				bit 7 disable writing (0 – value will be written to
				EEPROM, 1 – writing
				disabled.)
write protect	22 MSB	R, W,	write protect time in seconds after	0 = off
delay		EEPROM	user knob operation (default = 10 s,	
			0x0A)	
			,	
			(This protection time prevents the	
			PLC from overriding the values set	
			manually by the knob.)	



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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
latch state	24 LSB	R,W	state to be catched	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 bit 0 DI 1
		EEPROM	0 – log. 0 (default) 1 – log. 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		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



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min temp	27 LSB	R,W	minimum temperature which user	recalculate:
	27 MSB	EEPROM	can set as setpoint for temp, day	temperature
			and night	= read value / 100
			-199.99 to 199.99	
			(defeath 40% 0.00700)	00
			(default = 18°C, 0x0708)	199.99 19999
				-0.01 0FFFFhex -199.99 0B1E1hex
max temp	28 MSB	R,W	maximum temperature which user	recalculate:
max tomp	28 MSB	EEPROM	can set as setpoint for temp, day	temperature
			and night	= read value / 100
			-199.99 to 199.99	
			(1.5. 11. 0000 0.0400)	0 0
			(default = 26°C, 0x0A28)	199.99 19999
				-0.01 0FFFFhex -199.99 0B1E1hex
min outside	29 LSB	R,W	minimum outside temperature	recalculate:
temp	29 MSB	EEPROM	which user can set as setpoint for	temperature
			heating enable	= read value / 100
			-199.99 to 199.99	
				0 0
			(default = -20°C, 0xF830)	199.99 19999
				-0.01 0FFFFhex -199.99 0B1E1hex
max outside	30 MSB	R,W	maximum outside temperature	recalculate:
temp	30 MSB	EEPROM	which user can set as setpoint for	temperature
P			heating enable	= read value / 100
			-199.99 to 199.99	
			(1.6. 11. 0000 0.0000)	0 0
			(default = 30°C, 0x0BB8)	199.99 19999 -0.01 0FFFFhex
				-199.99 0B1E1hex
min DHW	31 LSB	R,W	minimum temperature which user	recalculate:
temp	31 MSB	EEPROM	can set as setpoint for DHW	temperature
			-199.99 to 199.99	= read value / 100
			(1.5. 1/2.4000.0.0050)	
			(default = 10°C, 0x03E8)	0 0 199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
max DHW	32 MSB	R,W	maximum temperature which user	recalculate:
temp	32 MSB	EEPROM	can set as setpoint for DHW	temperature
			-199.99 to 199.99	= read value / 100
			(dofault = 00°C 0×2220)	
			(default = 90°C, 0x2328)	0 0 199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
corr temp	33 MSB	R,W	correction: adds to the actual	recalculate:
	33 MSB	EEPROM	temperature measured by the	temperature
			internal sensor; compensates the	= read value / 100
			internal thermal dissipation	0 0
			-20.00 to 20.00	199.99 19999
			20.00 to 20.00	-0.01 0FFFFhex
			(default = about -1.5°C, depending	-199.99 0B1E1hex
1			on module type)	



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min rh	34 LSB	R,W	minimum humidity which user can	recalculate:
	34 MSB	EEPROM	set as setpoint	humidity
			0.000/ /	= read value / 100
			0.00% to 100.00%	0 0
			(default = 10%, 0x03E8)	100.00 10000
max rh	35 LSB	R,W	maximum humidity which user can	recalculate:
	35 MSB	EEPROM	set as setpoint	humidity
				= read value / 100
			0.00% to 100.00%	0 0
			(default = 90%, 0x2328)	100.00 10000
corr rh	36 LSB	R,W	correction: adds to the actual	recalculate:
	36 MSB	EEPROM	humidity measured by the internal	humidity
			sensor (applicable for types with	= read value / 100
			humidity sensor only)	00
			-10.00 to 10.00 %	199.99 19999
			10.00 to 10.00 %	-0.01 0FFFFhex
			(default = 0)	-199.99 0B1E1hex
min remote 0	37 LSB	R,W	minimum value which user can set	recalculate:
	37 MSB	EEPROM	as remote 0	remote value = read value / 100
			-199.99 to 199.99	- read value / 100
				0 0
			(default = -199.99)	199.99 19999
				-0.01 0FFFFhex
max remote 0	38 LSB	R,W	maximum value which user can set	-199.99 0B1E1hex recalculate:
max remote o	38 MSB	EEPROM	as remote 0	remote value
				= read value / 100
			-199.99 to 199.99	
			(default = 199.99)	0 0 199.99 19999
			(default = 199.99)	-0.01 0FFFFhex
				-199.99 0B1E1hex
min remote 1	39 LSB	R,W	minimum value which user can set	recalculate:
	39 MSB	EEPROM	as remote 1	remote value
			-199.99 to 199.99	= read value / 100
			100.00 to 100.00	0 0
			(default = -199.99)	199.99 19999
				-0.01 0FFFFhex
max remote 1	40 LSB	R,W	maximum value which user can set	-199.99 0B1E1hex recalculate:
I III AX I CIII ULE I	40 LSB 40 MSB	EEPROM	as remote 1	remote value
				= read value / 100
			-199.99 to 199.99	
			(default = 199.99)	0 0 199.99 19999
			(default = 199.99)	1-0.01 0FFFFhex
				-199.99 0B1E1hex
min remote 2	41 LSB	R,W	minimum value which user can set	recalculate:
	41 MSB	EEPROM	as remote 2	remote value
			-199.99 to 199.99	= read value / 100
			155.55 to 199.99	0 0
			(default = -199.99)	199.99 19999
				-0.01 0FFFFhex
]			-199.99 0B1E1hex



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max remote 2	42 LSB 42 MSB	R,W EEPROM	maximum value which user can set as remote 2	recalculate: remote value = read value / 100
			-199.99 to 199.99	
			(default = 199.99)	0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex
min remote 3	43 LSB	R,W	minimum value which user can set	recalculate:
	43 MSB	EEPROM	as remote 3	remote value = read value / 100
			-199.99 to 199.99	0 0
			(default = -199.99)	199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex
max remote 3	44 LSB	R,W	maximum value which user can set	recalculate:
	44 MSB	EEPROM	as remote 3	remote value
			-199.99 to 199.99	= read value / 100
			100.00 to 100.00	0 0
			(default = 199.99)	199.99 19999
				-0.01 0FFFFhex -199.99 0B1E1hex
min remote 4	45 LSB	R,W	minimum value which user can set	recalculate:
	45 MSB	EEPROM	as remote 4	remote value
			-199.99 to 199.99	= read value / 100
			100.00 to 100.00	0 0
			(default = -199.99)	199.99 19999
				-0.01 0FFFFhex -199.99 0B1E1hex
max remote 4	46 LSB	R,W	maximum value which user can set	recalculate:
	46 MSB	EEPROM	as remote 4	remote value
			-199.99 to 199.99	= read value / 100
			100.00 to 100.00	0 0
			(default = 199.99)	199.99 19999
min analogue time	47 LSB 47 MSB	R,W EEPROM	minimum value which user can set as analogue time schedule value	recalculate: remote value
programme	T WIOD	LEI KOW	as analogue time serieudie value	= read value / 100
value			0 to 199.99	
			(default = 5.0, 0x01F4)	0 0 199.99 19999
max analogue	48 LSB	R,W	maximum value which user can set	recalculate:
time	48 MSB	EEPROM	as analogue time schedule value	remote value
programme value			0 to 199.99	= read value / 100
value			0 10 199.99	0 0
			(default = 36.0, 0x0E10	199.99 19999
)	-0.01 0FFFFhex -199.99 0B1E1hex
dec places 1	49 LSB	R,W	LSB number of decimals for	0 no (##)
	49 MSB	EEPROM	temperature display (default = 1)	1 one (##.#)
			MSB number of decimals for temperature setting (default = 1)	2 two (##.##)
	L		tomporature setting (default – 1)	



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doo places 2	FOLCD	D W	LSB number of decimals for	0 20 (##)
dec places 2	50 LSB 50 MSB	R,W EEPROM	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.



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mb timeout	61 LSB	R,W	time from the last character in the	see register settings,
ino umeout	ULUD	EEPROM	Modbus frame (in 5 ms) after which	frame part receiving
			comes a timeout	Example:
			(range 5180 ms, default 50 ms =	10 = 50 ms
			0x0A)	
mb answer	61 MSB	R,W	time to delay the answer to Modbus	Example:
delay		EEPROM	master, in 5 ms	10 = 50 ms
			(default = 0 ms)	
show mode	62 LSB	R,W	data that roll on the LCD display	bit 0 temperature °C/°F
	62 MSB	EEPROM	(default = temperature, 1)	bit 1 humidity
			If only one of the bits is active there	bit 2 current time
			is only one value displayed. Otherwise they change periodically	bit 3 day temp
			after show time .	bit 4 night temp bit 5 outside temp
			and snow time.	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	time (in 100 ms) to display each	if 0, periodic change
		EEPROM	value in show mode (default = 2 s, 0x14)	disabled
edit return	63 MSB	R,W	time (in 100 ms) of user inactivity to	
time	OO WOD	EEPROM	return from edit mode to show	
			mode (default = 10 s, 0x64)	
quick edit	64 LSB	R,W	value which is set by turning the	0 temperature
value		EEPROM	knob. The value must be enabled	1 humidity
			for editing at allowed operation	2 day temp
			modes.	3 night temp
				4 outside temp
			(default = temperature, 0x00)	5 DHW temp
				6 heating curve
				7 remote 0 8 remote 1
				9 remote 2
				10 remote 3
				11 remote 4
quick edit	64 MSB	R,W	number of mode which is editable	0 no PUSH function
mode number		EEPROM	through quick edit menu (short push	1 presence mode
			of the knob). "Change show mode"	2 day/night mode
			changes between displayed values	3 fan
			(see show mode); pushing the	4 heat/cool mode
			knob displays the first value from	5 change show mode
			the show mode register.	6 user pattern mode
			(4050.46 = 0)	(see allowed operation
			(default = 0)	modes)



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long push	65 LSB	R,W	time (in 100 ms) evaluated as long	
time	00 200	EEPROM	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 10heat/cool mode bit 11 remote 0 bit 12 remote 1 bit 13 remote 2 bit 14 remote 3
presence mode edit	67 LSB	R,W EEPROM	states in presence mode that user is able to switch between	bit 15 remote 4 bit 0 comfort (occupied house)
mask			(default = 0, no states)	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)



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fan mode edit	68 LSB	R,W	states in fan mode that user is able	bit 0 Auto (fan + A)
mask		EEPROM	to switch between	bit 1 Man Off (fan + M)
			(default = 0, no states)	bit 2 Man 1 (fan + M + Stage 1)
			2, 110 0101007	bit 3 Man 2 (fan + M +
				Stage 1,2)
				bit 4 Man 3 (fan + M + Stage 1,2,3)
heat/cool	68 MSB	R,W	states in heat / cool mode that user	bit 0 off (Off)
mode edit mask		EEPROM	is able to switch between	bit 1 heat only (heat) bit 2 cool only (cool)
IIIask			(default = 0, no states)	bit 3 fan only (fan)
				bit 4 auto (heat + cool)
user pattern	69 LSB	R,W	states in user pattern mode that	bit 0 user_1_pattern
mode edit mask		EEPROM	user is able to switch between	bit 1 user_2_pattern bit 2 user_3_pattern
madic			(default = 0, no states)	bit 3 user_4_pattern
	69 MSB		reserved	bit 4 user_5_pattern
	OS IVISB		reserved	
Register 70 fo	r Ul09x	1		
set CO2	70 LSB	R, W,	CO2 setpoint for the function of	in ppm
	70 MSB	EEPROM	CO2-stat (see reg. 6, DO1 settings)	
			settings)	
			(default = 1200 ppm, 0x04B0)	
Register 70 fo	r UX0 and	UI0 (except for	· UI09x)	
down button	70 LSB	R	number of short pushes for the	
short pushes	70 LOD		"down" button, after reaching the	
			max value the register resets, only	
down button	70 MSB	R	UX number of long pushes for the	
long pushes			"down" button, after reaching the	
			max value the register resets, only UX	
remote/local	71 LSB	R,W RAM	0 symbol controlled locally	bit 0 clock
symbols 0	71 MSB		(symbols cannot be written remotely	bit 1 temp. sensor
			from Modbus, data are ignored) 1 symbol controlled remotely –	bit 2 house bit 3 person
			symbols are not controlled by user	bit 4 moon
			(by internal UI functions); this	bit 5 sun
			applies for basic values, i.e. all except remote_x (register 81 and	bit 6 off bit 7 drink
			below)	bit 8 heat
			,	bit 9 cool
			Use remote control to set individual symbols from your PLC.	bit 10 water tap (DHW) bit 11 spanner (service)
			Symbolo from your r Lo.	bit 12 boiler
				bit 13 alarm bell
				bit 14 fan lower bit 15 fan upper
				an appoi



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	T	T = =	T	
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



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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)
display	76 LSB	R,W RAM	displayed symbols for basic values	bit 10 r (weekday) bit 11 fan auto bit 12 fan manual bit 13 fan speed 1 bit 14 fan speed 2 bit 15 fan speed 3 bit 0 SETTING
symbols 2	76 MSB		including remote_x	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



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remote 2	89 LSB	R,W	remote 2 value	see remote 0
	89 MSB	EEPROM		
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	121 02 h 01 min
program Monday 1, value	102 LSB 102 MSB	R, W, EEPROM	default = 06:00, 0x0168 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)	see program Monday 1, value
program Monday 3, time	105 LSB 105 MSB	R, W, EEPROM	default = night, 0x0001 time schedule, Monday, event 3 time in minutes since 0:00 (default = 14:00, 0x0348	see program Monday 1, time



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program	106 LSB	R, W, EEPROM	time schedule, Monday, event 3	see program Monday 1,
Monday 3, value	106 MSB	EEPROIVI	(valid for all schedule types: if bit 15 set to 1, event is not active)	value
			default = day, 0x0000	
program	107 LSB	R, W,	time schedule, Monday, event 4	see program Monday 1,
Monday 4, time	107 MSB	EEPROM	time in minutes since 0:00	time
			default 22:00, 0x0528	
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)	see program Monday 1, value
			default = night, 0x0001	
program	109 LSB	R, W,	time schedule, Monday, event 5	see program Monday 1,
Monday 5, time	109 MSB	EEPROM	time in minutes since 0:00	time
program	110 LSB	R, W,	default = 06:00, 0x0168 time schedule, Monday, event 5	see program Monday 1,
Monday 5, value	110 MSB	EEPROM	(valid for all schedule types: if bit 15 set to 1, event is not active)	value
			default = disabled, 0x8000	
program Monday 6, time	111 LSB 111 MSB	R, W, EEPROM	time schedule, Monday, event 6 time in minutes since 0:00	see program Monday 1, time
ume			default = 06:00, 0x0168	
program Monday 6,	112 LSB 112 MSB	R, W, EEPROM	time schedule, Monday, event 6 (valid for all schedule types: if bit 15	see program Monday 1, value
value			set to 1, event is not active)	
program	113 LSB	R, W,	default = disabled, 0x8000 time schedule, Tuesday, event 1	see program Monday 1,
Tuesday 1, time	113 MSB	EEPROM	time in minutes since 0:00	time
			default = 06:00, 0x0168	
program	184 LSB	R, W,	time schedule, Sunday, event 6	see program Monday 1,
Sunday 6, value	184 MSB	EEPROM	(valid for all schedule types: if bit 15 set to 1, event is not active)	value
			default = disabled, 0x8000	
user 1 pattern	185 LSB	R, W,	symbols for user 1 pattern	bit 0 clock
symbols 0	185 MSB	EEPROM	default = 0x0000	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



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	•	,		T
user 1 pattern	186 LSB	R, W,	symbols for user 1 pattern	bit 0 °C
symbols 1	186 MSB	EEPROM		bit 1 °F
			default = 0x0000	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	187 LSB	R, W,	symbols for user 1 pattern	bit 0 SETTING
symbols 2	187 MSB	EEPROM		bit 1 ERROR
			default = 0x0000	bit 2 No.
	1			bit 3 small 7-segment
				(upper right corner)
				bit 4-7 reserved
				bit 8-15 small 7-
				segment value, if larger
ugar 2 pattarn	188 LSB	D W	aymbola for year 2 nattern	than 9, "h" is displayed
user 2 pattern symbols 0	188 MSB	R, W, EEPROM	symbols for user 2 pattern	see user 1 pattern symbols 0
Symbols 0	TOO WISD	EEFROW	default = 0x0000	Syllibols 0
user 5 pattern	199 LSB	R, W,	symbols for user 5 pattern	see user 1 pattern
symbols 2	199 MSB	EEPROM		symbols 2
- 11			default = 0x0000	
Registers 200				
actual position	200 LSB	R, RAM	actual position of the blinds (when	in %, 0100 %
			blinds move, update after 1 s)	
	200 MSB		reserved	
			1000,100	
manual	201 LSB	R, W, RAM	manual blinds control: if the	bit 0 blinds
control	201 202	11, 11, 10 11	corresponding bit is 1, blinds are	Sit o Similao
00111101			commanded remotely and local	
			control is disabled (see position	
			command)	
position	201 MSB	R, W, RAM	manual blinds settings, the action is	in %, 0100 % (0% -
command	1		performed only at value change	blinds up, 100% - blinds
			(and if enabled in manual control)	down)
sunblind	202 LSB	R, W,	blinds configuration	bits 01: command after
settings		EEPROM		restart (0 – no action, 1 –
	000 1405	D W	(default: no action, 0x00)	up, 2 – down)
rotation time	202 MSB	R, W,	time for rotating the blinds by 180 °	in 0.1 s
		EEPROM	(default: 1.2 a 0v0C)	
whole position	203 LSB	R, W,	(default: 1.2 s, 0x0C) time of transit time between Up and	in secs, 1255
time	203 L3D	EEPROM	Down positions	111 5005, 1200
unie		LLI KOW	Down positions	
		1		
			(default: 70 s, 0x46)	



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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)	in 0.1 s
			(default: 0.5 s, 0x05)	
move short time	204 LSB	R, W, EEPROM	time to rotate the blinds when short push	in 0.1 s, 125.5 s
			(default: 0.2 s, 0x02)	
waiting time up/down	204 MSB	R, W, EEPROM	pause time between up and down direction change – to protect the motors	in 0.1 s, 0.6 3.0 s
			(default: 0.7 s, 0x07)	
Registers 200	to 204 for U	JI09x		
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	5 are releva	int only for U	I0 and UX0	
DI1 counter	205 LSB	R, RAM	counter input DI1 (change from 0 to	if reached maximal value
			1)	(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
	1	-1	I	I



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V4

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	5		sec	00-59
14 MSB	0		10xmins			mir	าร		min	00-59
15 LSB	0		10xhour	10xhour	hours			hour	00-23	
15 LSB	U			TOXITOUT						
15 MSB	0	0	0	0	0	C	lay		day	01-07
16 LSB	0	0	10xc	late		dat	:e		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

Release 16.5.2012 ver. 13200

V4

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 (1active)	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			



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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	recalculate: temperature = read value / 100
			(default = 21°C, 0x0834)	0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex



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ant night/ nea	16 L CD	DW	night/standhy mada hasting	receleulate:
set night/ pre-	16 LSB	R,W	night/standby mode heating	recalculate:
comfort heating	16 MSB	EEPROM	temperature setpoint	temperature =
temp			set by user	read value / 100
			(default = 19°C, 0x076C)	0 0
				199.99 19999
				-0.01 0FFFFhex
	47105	D 14/	66 1 1 1 11 11	-199.99 0B1E1hex
set depression/	17 LSB	R,W	off mode heating temperature	recalculate:
economy heating	17 MSB	EEPROM	setpoint	temperature =
temp			set by user	read value / 100
			(1.5.14.4000.0.0170)	
			(default = 12°C, 0x04B0)	00
				199.99 19999
				-0.01 0FFFFhex
ant day/	40 1 00	D W	dov/opposent residence discrete	-199.99 0B1E1hex
set day/ comfort	18 LSB	R,W	day/comfort mode cooling	recalculate:
cooling temp	18 MSB	EEPROM	temperature setpoint	temperature =
			set by user	read value / 100
			(defeult = 0400, 0::0000)	00
			(default = 24°C, 0x0960)	199.99 19999
				-0.01 0FFFFhex
act night/ are	19 LSB	D W	night/standby made scaling	-199.99 0B1E1hex
set night/ pre-		R,W EEPROM	night/standby mode cooling	recalculate:
comfort cooling	19 MSB	EEPROM	temperature setpoint	temperature =
temp			set by user	read value / 100
			(dofault = 26°C 0v0A29)	0 0
			(default = 26°C, 0x0A28)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set depression/	20 LSB	R, W	off mode cooling temperature	recalculate:
economy cooling	20 MSB	EEPROM	setpoint	temperature =
temp			set by user	read value / 100
13.116				
			(default = 35°C, 0x0DAC)	0 0
			(Siddle 55 5, SABAO)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
actual temp	21 LSB	R, RAM	actual temperature measured by	recalculate:
	21 MSB	-,	the internal sensor incl. correction	temperature =
			(see corr temp)	read value / 100
			, , , , , , , , , , , , , , , , , , ,	
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
actual autoida	22 I CD		actual outoida tamparatura masu	
actual outside	22 LSB	R, W RAM	actual outside temperature, may	recalculate:
temp	22 MSB		be written to RAM optionally for	temperature =
			display	read value / 100
				0 0 199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
		•	•	•



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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
regulator settings	25 MSB 26 LSB	R,W EEPROM	reserved 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	



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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
	29 LSB 29 MSB		reserved	(60 min, 0x0E10)
	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 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	



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step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting	step = read value / 100
			(default = 0.5 °C, 0x32)	1 0.01 50 0.5
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting	100 1 etc. in minutes
		_	(default = 5 mins, 0x05)	
	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)	0 push function inactive 1 presence mode 2 reserved
change over period	43 MSB	R,W EEPROM	(default = 0x01) 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)	for actual time and basic setpoints settings
			(default = 5 s, 0x32)	
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



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presence mode	46 LSB	R,W	states in presence mode that user	bit 0 day (sun +
edit mask	46 MSB	EEPROM	is able to switch between	occupied house)
			(default = all, 0x001F)	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)	e.g. 121 2h 1min
			(default = 06:00 h, 0x0168)	
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value	0 day/comfort 1 night/standby 2 off/depression
			(default = 0)	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)	e.g. 121 2h 1min
			(default = 08:00 h)	
program Monday Event 2 value	57 LSB 57 MSB	R,W EEPROM	time schedule, Monday, event No. 2, value	0 day/comfort 1 night/standby 2 off/depression
			(default = 1)	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)	e.g. 121 2h 1min
			(default = 14:00 h)	



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program Monday Event 3 value	59 LSB 59 MSB	R,W EEPROM	time schedule, Monday, event No. 3, value	0 day/comfort 1 night/standby
			(default = 0)	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)	e.g. 121 2h 1min
			(default = 22:00 h)	
program Monday Event 4 value	61 LSB 61 MSB	R,W EEPROM	time schedule, Monday, event No. 4, value	0 day/comfort 1 night/standby 2 off/depression
			(default = 1)	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)	e.g. 121 2h 1min
			(default = 06:00 h, 0x0168)	
program Monday Event 5 value	63 LSB 63 MSB	R,W EEPROM	time schedule, Monday, event No. 5, value	0 day/comfort 1 night/standby 2 off/depression
			(default = disabled, 0x8000)	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)	e.g. 121 2h 1min
			(default = 06:00 h)	
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value	0 day/comfort 1 night/standby 2 off/depression
			(default = disabled)	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)	e.g. 121 2h 1min
			(default = 06:00 h)	
program Sunday Event 6 value	137 LSB 137 MSB	R,W EEPROM	time schedule, Sunday, event No. 6, value	0 day/comfort 1 night/standby
			(default = disabled)	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



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V4

reset	1002 LSB	W, RAM	reset device	The device resets if reset
	1002 MSB			is enabled (see reg. 3),
				and a non-zero value is
				written to this register.
		1		1

Real time table

Address	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB			10xsecs			secs	5		sec	00-59
14 MSB	0	10xmins			mir	ıs		min	00-59	
15 LSB	0		10xhour	10.460.4		hai			hour	00-23
15 LSB	U			10xhour hours						
15 MSB	0	0	0	0	0	c	lav		day	01-07
16 LSB	0	0	10xc	late	date			date	01-31	
16 MSB	0	0	0	10xmonth	month			month	01-12	
17 LSB	10xyear				У	ear	•	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 (1active)	
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 (1active)	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)



UC200 Room controller

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
	45.1.00			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	recalculate: temperature = read value / 100
			(default = 21°C, 0x0834)	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	recalculate: temperature = read value / 100
			(default = 19°C, 0x076C)	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	recalculate: temperature = read value / 100
			(default = 12°C, 0x04B0)	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	recalculate: temperature = read value / 100
			(default = 24°C, 0x0960)	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	recalculate: temperature = read value / 100
			(default = 26°C, 0x0A28)	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	recalculate: temperature = read value / 100
			(default = 35°C, 0x0DAC)	0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex



UC200 R

Room controller	V4
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	04100	D D	1 , 1, , , , , , , , , , , , , , , , ,	T
actual temp	21 LSB	R, RAM	actual temperature measured by	recalculate:
	21 MSB		the internal sensor incl. correction	temperature =
			(see corr temp)	read value / 100
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
actual outside	22 LSB	R, W RAM	actual outside temperature, may	recalculate:
temp	22 MSB		be written to RAM optionally for	temperature =
			display	read value / 100
			' '	
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
				-199.99 UB 1E IIIEX
set presence	23 LSB	R,W	presence status set by user	bit 0 comfort (occupied
mode	23 MSB	EEPROM	(displayed symbols depend on the	house) or day (sun +
			configuration register regulator	occupied house)
			settings, if set to hotel then	bit 1 standby (empty
			comfort, standby, off; if set to	house) <i>or</i> night (moon +
			residential then day, night,	occupied house)
				bit 2 off (off) or
			depression, auto, party)	
				depression (empty house)
			(default = comfort/day, 0x0001)	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
	04100			attempt will be ignored)
	24 LSB		reserved	
	24 MSB			
actual control	25 LSB	R, RAM	actual mode used for control, if on	bit 0 comfort/day
mode		,	manual then the actual control	bit 1 standby/night
111000			mode is equal to set presence	bit 2 off/depression
			mode, if on auto then according to	Dit 2 Oil/depiession
			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)	
	25 MSB		reserved	
I	1 = 0 111.00	I	1.000.700	<u>l</u>



UC200 Room controller

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
				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
controller settings 2	29 LSB	R,W EEPROM	controller configuration 2	(60 min, 0x0E10) 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	



UC200 Room controller

controller V4

	minimum relative user temperature	recalculate:
B EEPROM	correction, a positive value is	minimum correction
	saved and is taken as negative limit	= -(read value/100); -10.00 1000
		(-3.5 °C, 0x015E)
	maximum relative user	recalculate:
B EEPROM	temperature correction	maximum correction =
		(read value/100); 10.00 1000
		10.00 1000
		(3.5 °C, 0x015E)
	minimum temperature which user	recalculate:
B EEPROM		temperature
		= read value / 100
	-199.99 10 199.99	0 0
	(default = 10 °C, 0x03E8)	199.99 19999
	,	-0.01 0FFFFhex
2 72 14/		-199.99 0B1E1hex
		recalculate: temperature
B EEFROW		= read value / 100
	-199.99 to 199.99	rodd valdo / roo
		0 0
	(default = 40 °C, 0x0FA0)	199.99 19999
		-0.01 0FFFFhex -199.99 0B1E1hex
B R,W	correction: adds to the actual	recalculate:
	temperature measured by the	temperature
		= read value / 100
	-20.00 to 20.00	0 0
	(default = -1.5 K 0xFF6A)	199.99 19999
	(46.44.1)	-0.01 0FFFFhex
		-199.99 0B1E1hex
	reserved	
	step for user temperature	step = read value / 100
EEPROM	setpoints setting	4 0.04
	(default = 0.5 °C (0x32)	1 0.01 50 0.5
	(default = 0.5 °C, 0x32)	100 1 etc.
B R,W	time step for time schedule setting	in minutes
EEPROM		
	Teserveu	
	data that roll on the LCD display	bit 0 temperature
B EEPROM	(default = 1)	bit 1 outside temp.
		bit 2 current time
		(default = temperature,
	periodically after show time .	0x0001)
	B R,W EEPROM B R,W EEPROM	R.W maximum relative user temperature correction B. R.W minimum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 10 °C, 0x03E8) B. R.W maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40 °C, 0x0FA0) B. R.W correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A) B. R.W step for user temperature setpoints setting (default = 0.5 °C, 0x32) B. R.W time step for time schedule setting (default = 5 mins, 0x05) reserved B. R.W 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



UC200 Room controller

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)	0 push function inactive 1 presence mode 2 reserved
	43 MSB		(default = 0x01) reserved	
long push time	44 LSB	R,W	time (in 100 ms) evaluated as long	for editing of the time
long push time	TT LOD	EEPROM	push (go to time schedule menu / leave menu)	schedule and presence or fan mode
auman lana nuah	44 MCD	D.W	(default = 1.5 s, 0x0F)	for oatual times and basis
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu)	for actual time and basic setpoints settings
			(default = 5 s, 0x32)	
presence mode edit mask	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) states in presence mode that user is able to switch between (default = all, 0x001F)	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 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)



UC200 Room controller

V4

control system	14101	D D D D D D D D D D	OC200 ROOM CONTROLLED	V4
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)	e.g. 121 2h 1min
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	(default = 06:00 h, 0x0168) 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)	e.g. 121 2h 1min

(default = 06:00 h, 0x0168)



UC200 Room controller

V4

is enabled (see reg. 3), and a non-zero value is written to this register.

program Monday	63 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 5 value	63 MSB	EEPROM	5, value	1 night/standby
			,	2 off/depression
			(default = disabled, 0x8000)	bit 15 = 1 event is
				disabled
program Monday Event 6 time	64 LSB 64 MSB	R,W EEPROM	time schedule, Monday, time of	e.g. 121 2h 1min
Evenilo lime	04 W3B	EEPROW	event No. 6, in mins since 0:00 (midnight)	
			(manight)	
			(default = 06:00 h)	
program Monday	65 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 6 value	65 MSB	EEPROM	6, value	1 night/standby
			(default = disabled)	2 off/depression bit 15 = 1 event is
			(default – disabled)	disabled
program	66 LSB	R,W	time schedule, Tuesday, time of	e.g. 121 2h 1min
Tuesday Event 1	66 MSB	EEPROM	event No. 1, in mins since 0:00	
time			(midnight)	
			(default = 06:00 h)	
•••				
program Sunday	137 LSB	R,W	time schedule, Sunday, event No.	0 day/comfort
Event 6 value	137 MSB	EEPROM	6, value	1 night/standby
				2 off/depression
			(default = disabled)	bit 15 = 1 event is
				disabled
uptime	1000 LSB	R	uptime (s)	number of seconds after
	1000 MSB			last power on / reset
	1001 LSB 1001 MSB			
reset	1002 LSB	W, RAM	reset device	The device resets if reset

Real time table

1002 MSB

Address	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
14 LSB		10xsecs				secs			sec	00-59
14 MSB	0	10xmins				mir	ıs		min	00-59
15 LSB	0		10xhour	10xhour		hou	ırc		hour	00-23
13 L3B	U			TOXITOUT	hours					
15 MSB	0	0	0	0	0 dav			day	01-07	
16 LSB	0	0	10xc	late	date			date	01-31	
16 MSB	0	0	0	10xmonth	month			month	01-12	
17 LSB	•	10x	year		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.





V4

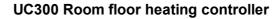
domat control system

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 (1active)	
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.





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V4

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)



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serial port settings	5 LSB	R,W EEPROM	serial line parameter settings	bit 0-1 parity (00 – no parity, 01 – even, 10 –
ocuings .		LLITTOW	(default = no parity, 1 stop bit)	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	bit 0 DI1
			of the input regardless of the inputs settings values (the	bit 1 reserved bit 2 heating demand
			function of input (presence /	(PID output heat > 5%)
			window) is set in inputs settings	
pid output HEAT	8 LSB	R, RAM	register) 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	bit 1 heat output
			output); if set to 0, PID output values apply	
push button counter	10 MSB	R, W RAM	push button counter; after overflow is reset	
manual heat	11 LSB	R, W RAM	manual heat output setting (only if	in %, range 0 100%
output			the corresponding bit in the manual control register is set)	
	11 MSB		reserved	
set temp	12 LSB	R, W RAM	setpoint correction set by user;	recalculate:
correction	12 MSB		resets at each operation mode change	temperature = read value / 100
			3.5°C reads 350	0 0
			(limits are not in the min and	199.99 19999 -0.01 0FFFFhex
			(limits are set in the min and max rel. temp correction registers)	-199.99 0B1E1hex
actual temp set	13 LSB	R, RAM	actual heating setpoint incl.	recalculate:
point HEAT	13 MSB		setpoint correction (reg. 12)	temperature = read value / 100
				read value / 100
				0 0
				199.99 19999 -0.01 0FFFFhex
				-199.99 0B1E1hex
	14 LSB		reserved	
	14 MSB			
1	i	1	1	1



UC300 Room floor heating controller

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	T . = . = =	T =	T	1
set day/ comfort heating temp	15 LSB 15 MSB	R,W EEPROM	day/comfort mode heating temperature setpoint set by user	recalculate: temperature = read value / 100
			(default = 21°C, 0x0834)	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	recalculate: temperature = read value / 100
			(default = 19°C, 0x076C)	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	recalculate: temperature = read value / 100
			(default = 12°C, 0x04B0)	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



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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	p
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
regulator settings	26 LSB	R,W EEPROM	reserved 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)



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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



UC300 Room floor heating controller

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main mal daman	22 L CD	ID.W	maining and ative years to make and and	no colovileto.
min rel. temp	33 LSB	R,W	minimum relative user temperature	recalculate:
correction	33 MSB	EEPROM	correction, a positive value is	minimum correction
			saved and is taken as negative	= -(read value/100);
			limit	-10.00 1000
				(-3.5 °C, 0x015E)
max rel. temp	34 LSB	R,W	maximum relative user	recalculate:
correction	34 MSB	EEPROM	temperature correction	maximum correction =
			·	(read value/100);
				10.00 1000
				(3.5 °C, 0x015E)
min day, night,	35 LSB	R,W	minimum temperature which user	recalculate:
depression temp	35 MSB	EEPROM	can set as setpoint for day, night,	temperature
			and off modes	= read value / 100
			-199.99 to 199.99	
				00
			(default = 10 °C, 0x03E8)	199.99 19999
				-0.01 0FFFFhex
	00100	D.14/		-199.99 0B1E1hex
max day, night,	36 LSB	R,W	maximum temperature which user	recalculate:
depression temp	36 MSB	EEPROM	can set as setpoint for day, night,	temperature
			and off modes -199.99 to 199.99	= read value / 100
			-199.99 to 199.99	0 0
			(default = 40 °C, 0x0FA0)	199.99 19999
			(deradit = 40° O, Oxor Ao)	-0.01 0FFFFhex
				-199.99 0B1E1hex
sensor corr temp	37 LSB	R,W	correction: adds to the actual	recalculate:
·	37 MSB	EEPROM	temperature measured by the	temperature
			internal sensor	= read value / 100
			-20.00 to 20.00	
				0 0
			(default = -1,5 K, 0xFF6A)	199.99 19999
				-0.01 0FFFFhex
	00 1 00			-199.99 0B1E1hex
external temp	38 LSB		correction: adds to the actual	recalculate:
sensor corr	38 MSB		temperature measured by the	temperature
			external floor sensor -20.00 to 20.00	= read value / 100
			-20.00 to 20.00	0 0
			(default = 0 K, 0x0000)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
step temp	39 LSB	R,W	step for user temperature	step = read value / 100
		EEPROM	setpoints setting	
				1 0.01
			(default = 0.5 °C, 0x32)	50 0.5
-4	00 1405	DW	Kon a stand for the control of the c	100 1 etc.
step minutes	39 MSB	R,W	time step for time schedule setting	in minutes
		EEPROM	(default = 5 mins 0x05)	
	40 LSB	+	(default = 5 mins, 0x05)	
	40 LSB 40 MSB		reserved	
	40 IVISB			



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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	



UC300 Room floor heating controller

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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



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V4

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)	e.g. 121 2h 1min
ana ana ma Maradan	63 LSB	D.W.	(default = 06:00 h, 0x0168)	O doube make the
program Monday Event 5 value	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)	e.g. 121 2h 1min
			(default = 06:00 h)	
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value	0 day/comfort 1 night/standby 2 off/depression
			(default = disabled)	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			mir	IS		min	00-59
15 LSB	0		10xhour	10xhour	h a				hour	00-23
13 L3B	U			10xhour hours						
15 MSB	0	0	0	0	0	c	lav		day	01-07
16 LSB	0	0	10xc	late	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.

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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	0500hex
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)
status MSB	3 MSB	R, RAM	module status upper byte bit 0 0 normal mode 1 init mode	SW reset enabled: see reg. 3 LSB bit 1, reg. 1002.
			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)	
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 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)



FC010 Fancoil controller

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serial port	5 LSB	R,W	serial line parameter settings	bit 0-1 parity (00 – no
settings	0 200	EEPROM	,	parity, 01 – even, 10 –
			(default = no parity, 1 stop bit)	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	R, EEPROM	number of EEPROM writing	
	6 MSB		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	bit 0 input DI1
			presence, DI2 window / alarm	bit 1 input DI2
			contact) and heat/cool demands; DI1 and DI2 are influenced by	bit 2 heating demand (PID output HEAT > 5%)
			the inputs settings register	bit 3 cooling demand
			settings. If the FC010 is a master	(PID output COOL > 5%)
			(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.	
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	in %, range 0 100%
PID fan speed	9 LSB	R, RAM	the changeover (C/O) mode) fan demand from the PID	0 off
			controller	1 Stage 1
				2 Stage 2
UC comm. state	9 MSB	R, RAM	communication status of the room	3 Stage 3 0 communication OK
		,	unit UC 010 (if comm fails for 60	1 timeout
			secs, all controller outputs go to off (except for those controlled	2 MB exception 3 MB error
			manually, see register manual	O IVID CITUI
			control)	
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	bit 1 heat output bit 2 cool output
			speed, manual heat output,	bit 3 to 4 reserved
			manual cool output); if set to 0,	bit 5 C/O (1 = on)
manual fan	10 MSB	R, W RAM	PID output values apply manual fan speed setting (only if	0 off
speed		, 2	the corresponding bit in the	1 Stage 1
			manual control register is set)	2 Stage 2
			1	3 Stage 3



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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



FC010 Fancoil controller

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	40.1.05	DW	1 , , , , , , , , , , , , , , , , , , ,	T
set day/ comfort	18 LSB	R,W	day/comfort mode cooling	recalculate:
cooling temp	18 MSB	EEPROM	temperature setpoint	temperature =
			set by user	read value / 100
			(default = 24°C, 0x0960)	0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set night/ pre-	19 LSB	R,W	night/standby mode cooling	recalculate:
comfort cooling	19 MSB	EEPROM	temperature setpoint	temperature =
temp			set by user	read value / 100
			(default = 26°C, 0x0A28)	0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set depression/	20 LSB	R,W	off mode cooling temperature	recalculate:
economy cooling	20 MSB	EEPROM	setpoint	temperature =
temp			set by user	read value / 100
			(default = 35°C, 0x0DAC)	0 0
			,	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
actual temp	21 LSB	R, RAM	actual temperature measured by	recalculate:
	21 MSB		the internal sensor incl. correction	temperature =
			(see corr temp)	read value / 100
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
actual outside	22 LSB	R, W RAM	actual autaida tamparatura may	recalculate:
	22 LSB 22 MSB	R, W KAIVI	actual outside temperature, may	
temp	22 IVISB		be written to RAM optionally for	temperature = read value / 100
			display	read value / 100
				00
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set presence	23 LSB	R,W	presence status set by user	bit 0 comfort (occupied
mode	23 MSB	EEPROM	(displayed symbols depend on the	house) or day (sun +
			configuration register regulator	occupied house)
			settings, if set to hotel then	bit 1 standby (empty
			comfort, standby, off; if set to	house) or night (moon +
			residential then day, night,	occupied house)
			depression, auto, party)	bit 2 off (off) or
			aspissoion, auto, party)	depression (empty house)
			(default = comfort/day, 0x0001)	bit 3 auto (clock) – only
			(dordan connormaly, exceed)	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
1				attempt will be ignored)



FC010 Fancoil controller

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	04100	DW	for status and burners	h:40 A-4- /f A\
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)



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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 setpoint) 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 nonzero, 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) reserved	0 multi-slave function is off 1 or above number of FC010 slave modules
latch enable	30 MSB 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)



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	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	recalculate: temperature = read value / 100
			(default = 10 °C, 0x03E8)	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	recalculate: temperature = read value / 100
			(default = 40 °C, 0x0FA0)	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	recalculate: temperature = read value / 100
			(default = -1,5 K, 0xFF6A)	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	bit 0 is input 1 bit 1 is input 2
presence off delay	38 MSB	R,W EEPROM	(catched log. 0, 0x00) time delay after presence signal off (by DI1), default = 0	[0 255 min]



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step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting	step = read value / 100
			(default = 0.5 °C, 0x32)	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)	u push function inactive u presence mode u 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, 1255
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)	for actual time and basic setpoints settings
			(default = 5 s, 0x32)	



FC010 Fancoil controller

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-U	45 1 00	I D M	To attion on the at war and a plate to	1:40
allowed	45 LSB	R,W	settings that user is able to	bit 0 temp corr.
operation modes	45 MSB	EEPROM	perform	bit 1 heating day temp
			0 disabled	bit 2 heating night
			1 enabled	temp
				bit 3 heating
			(default = temp corr, fan mode	depression temp
			0x0201)	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
	40 1 00	D 14/	atata a la managa da	bit 10 time programme
presence mode	46 LSB	R,W	states in presence mode that user	bit 0 day (sun +
edit mask	46 MSB	EEPROM	is able to switch between	occupied house)
				bit 1 night (moon +
			(default = all, 0x001F)	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	47 LSB	R,W	fan states that user is able to	bit 0 Auto (fan + A)
mask	47 MSB	EEPROM	switch between	bit 1 Off (fan + M)
				bit 2 Man 1 (fan + M +
			(default = all, 0x001F)	Stage1)
			(deradit dii, oxoo ii)	bit 3 Man 2 (fan + M +
				Stage1 and 2)
				bit 4 Man 3 (fan + M +
diaplay symbols	48 LSB	R,W RAM	displayed symbols	Stage1, 2 and 3)
display symbols		R,VV RAIVI	displayed symbols	bit 0 spanner
	48 MSB			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	R,W	Real time clock	see table below;
	49 MSB	EEPROM		to write to those registers,
	50 LSB		(not subject to INIT command)	write to EEPROM must
	50 MSB		, in the second	be enabled in the status
	51 LSB			LSB register
	51 MSB			
	52 LSB			
	52 MSB			
	53 LSB		reserved	
	53 MSB			
program Monday		R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 1 time	54 MSB	EEPROM	event No. 1, in mins since 0:00	C.g. 121 211 1111111
LACIII I IIIIIG	J4 IVISB	LLI KOW	(midnight)	
			(manight)	
			(default = 06:00 h, 0x0168)	
	<u> </u>		(deladit – 00.00 II, 0x0 100)	



FC010 Fancoil controller

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program Manda:	EE LOD	D W	time achadula Manday ayart Na	0 day/somfort
program Monday Event 1 value	55 LSB 55 MSB	R,W EEPROM	time schedule, Monday, event No. 1, value	0 day/comfort
Eveni i value	DO IVIOD	EEPROW	i, value	1 night/standby 2 off/depression
			(default = 0)	bit 15 = 1 event is
			(doradit – 0)	disabled
program Monday	56 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 2 time	56 MSB	EEPROM	event No. 2, in mins since 0:00	Sig. 12 1 211
			(midnight)	
			, ,	
			(default = 08:00 h)	
program Monday	57 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 2 value	57 MSB	EEPROM	2, value	1 night/standby
			(-1-614 4)	2 off/depression
			(default = 1)	bit 15 = 1 event is
program Monday	58 LSB	R,W	time schedule, Monday, time of	disabled e.g. 121 2h 1min
Event 3 time	58 MSB	EEPROM	event No. 3, in mins since 0:00	0.g. 121 211 1111111
	30 11100		(midnight)	
			(
			(default = 14:00 h)	
program Monday	59 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 3 value	59 MSB	EEPROM	3, value	1 night/standby
				2 off/depression
			(default = 0)	bit 15 = 1 event is
nanamana Marada	60 1 00	D W	time a pale of the Manager time of	disabled
program Monday Event 4 time	60 LSB 60 MSB	R,W EEPROM	time schedule, Monday, time of	e.g. 121 2h 1min
Event 4 time	OO IVISB	EEPROW	event No. 4, in mins since 0:00 (midnight)	
			(manight)	
			(default = 22:00 h)	
program Monday	61 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 4 value	61 MSB	EEPROM	4, value	1 night/standby
				2 off/depression
			(default = 1)	bit 15 = 1 event is
	00 1 05	D W	Constant A. M. J. C. C.	disabled
program Monday	62 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 5 time	62 MSB	EEPROM	event No. 5, in mins since 0:00	
			(midnight)	
			(default = 06:00 h, 0x0168)	
program Monday	63 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 5 value	63 MSB	EEPROM	5, value	1 night/standby
				2 off/depression
			(default = disabled, 0x8000)	bit 15 = 1 event is
			,	disabled
program Monday	64 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 6 time	64 MSB	EEPROM	event No. 6, in mins since 0:00	
			(midnight)	
			(dofault = 06:00 h)	
program Monday	65 LSB	R,W	(default = 06:00 h) time schedule, Monday, event No.	0 day/comfort
Event 6 value	65 MSB	EEPROM	6, value	1 night/standby
Event o value	OO WOD	LLI KOW	o, value	2 off/depression
			(default = disabled)	bit 15 = 1 event is
			, , , , , , , , , , , , , , , , , , , ,	disabled
L	1	1	ı	,



FC010 Fancoil controller

Release 8.12.2013 ver. 01601

V4

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	5		sec	00-59
14 MSB	0	10xmins				mir	ıs		min	00-59
15 LSB	0		10xhour	10.460.4		hai			hour	00-23
15 LSB	U			10xhour hours						
15 MSB	0	0	0	0	0	c	lav		day	01-07
16 LSB	0	0	10xd	late	date			date	01-31	
16 MSB	0	0	0	10xmonth	month			month	01-12	
17 LSB		10x	year		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 Fancoil controller

Release 11.4.2014 ver. 01602

V4

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)



FC015 Fancoil controller

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		1 =	T	
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	recalculate: temperature = read value / 100
			3.5°C reads 350 (limits are set in the min and max rel. temp correction registers)	0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex



FC015 Fancoil controller

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	4010=	I	1	
actual temp set	13 LSB	R, RAM	actual heating setpoint including	recalculate:
point HEAT	13 MSB		setpoint correction (reg. 12)	temperature =
				read value / 100
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
actual temp set	14 LSB	R, RAM	actual cooling setpoint incl.	recalculate:
point COOL	14 LSB	IX, IXAIVI	setpoint correction (reg. 12)	temperature =
point COOL	14 10136		serpoint correction (reg. 12)	read value / 100
				read value / 100
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set day/ comfort	15 LSB	R,W	day/comfort mode heating	recalculate:
heating temp	15 MSB	EEPROM	temperature setpoint	temperature =
			set by user	read value / 100
			_	
			(default = 21°C, 0x0834)	0 0
			(doladit – 21 0, 0x000 1)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
	40100	DW	piclet/stagedby, as a delbastice.	
set night/ pre-	16 LSB	R,W	night/standby mode heating	recalculate:
comfort heating	16 MSB	EEPROM	temperature setpoint	temperature =
temp			set by user	read value / 100
			(default = 19°C, 0x076C)	0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set depression/	17 LSB	R,W	off mode heating temperature	recalculate:
economy heating	17 MSB	EEPROM	setpoint	temperature =
temp			set by user	read value / 100
10				
			(default = 12°C, 0x04B0)	0 0
			(doladit - 12 0, 0x0400)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
ant day! as as faut	10 CD	DW	dov/comfort made as alice	
set day/ comfort	18 LSB	R,W	day/comfort mode cooling	recalculate:
cooling temp	18 MSB	EEPROM	temperature setpoint	temperature =
			set by user	read value / 100
			(default = 24°C, 0x0960)	0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set night/ pre-	19 LSB	R,W	night/standby mode cooling	recalculate:
comfort cooling	19 MSB	EEPROM	temperature setpoint	temperature =
temp			set by user	read value / 100
131116			33. 37 400.	1333 74133 7 100
			(default = 26°C, 0x0A28)	0 0
			(uclault - 20 C, UXUAZO)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex



FC015 Fancoil controller

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ant demandations	20 1 00	D W	off made as allow towns	receleulet :
set depression/	20 LSB	R,W	off mode cooling temperature	recalculate:
economy cooling	20 MSB	EEPROM	setpoint	temperature =
temp			set by user	read value / 100
			(default = 35°C, 0x0DAC)	0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex
actual temp	21 LSB	R, RAM	actual temperature measured by	recalculate:
·	21 MSB		the internal sensor incl. correction (see temp sensor corr)	temperature = read value / 100
				0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex
actual outside	22 LSB	R, W RAM	actual outside temperature, may	recalculate:
temp	22 MSB		be written to RAM optionally for display	temperature = read value/ 100
				0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex
set presence	23 LSB	R,W	presence status set by user	bit 0 comfort (occupied
mode	23 MSB	EEPROM	(displayed symbols depend on the	house) or day (sun +
			configuration register regulator	occupied house)
			settings, if set to hotel then	bit 1 standby (empty
			comfort, standby, off; if set to	house) <i>or</i> night (moon +
			residential then day, night,	occupied house)
			depression, auto, party)	bit 2 off (off) or
			(default = comfort/day, 0x0001)	depression (empty house) bit 3 auto (clock) – only
			Comfort/Day acts \/A\/ autrut to	when residential
			Comfort/Day sets VAV output to	bit 4 party (sun + drink
			VAVmin 100 %	+ clock, after 2h goes to
			Standby/Night sets VAV output to	auto) – only when
			VAVmin Off/Depression sets VAV output to	bit 5 to 14 reserved
			0 %.	bit 15 write enable (if
			0 70.	set to 1 value will be
				written into register, if in 0
				attempt will be ignored)
set VAV mode	24 LSB	R,W	VAV status set by user;	bit 0 Auto (fan + A)
	24 MSB	EEPROM	the stages correspond to:	bit 1 Off (fan + M)
			Off: VAVmin (as in reg. 138)	bit 2 Man 1 (fan + M +
			Man1: 30 %	Stage1)
			Man2: 70 %	bit 3 Man 2 (fan + M +
			Man3: 100 %	Stage1 and 2)
				bit 4 Man 3 (fan + M +
			(default = Auto, 0x0001)	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)



FC015 Fancoil controller

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actual control	25 LSB	R, RAM	actual mode used for control, if on	bit 0 comfort/day
mode	23 L35	IX, IXAWI	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 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 setpoint) 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)



FC015 Fancoil controller

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regulator	29 LSB	R,W	controller configuration, part 2	bit 0 fan stages reset to
settings 2		EEPROM	(defaults = fan stage reset enable, slave off, DI2 as window contact, correction reset enable, PI control, autocalibration enabled, 4-pipe, 0xC9)	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 Dl2 as alarm input, switches off all outputs bit 3 temp correction reset to 0 when presence mode changes bit 4 control mode (0 – Pl, 1 – on/off) bit 5 reserved bit 6 CO2 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)



FC015 Fancoil controller

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	04105	DW	I as a standard material of	
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)
				(5 K, 0001F4)
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	recalculate: temperature = read value / 100
			(default = 10 °C, 0x03E8)	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	recalculate: temperature = read value / 100
			(default = 40 °C, 0x0FA0)	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	recalculate: temperature = read value / 100
			(default = -3,2 K, 0xFEC0)	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	bit 0 is input 1 bit 1 is input 2
			(catched log. 0, 0x00)	
	38 MSB		reserved	
step temp	39 LSB	R,W EEPROM	step for user temperature setpoints setting	step = read value / 100
			(default = 0.5 °C, 0x32)	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]



FC015 Fancoil controller

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show mode	41 LSB	R,W	data that roll on the LCD display	bit 0 temperature
	41 MSB	EEPROM	(default = 1) If only one of the bits is active there is only one value displayed. Otherwise they change periodically after show time .	bit 1 outside temp. bit 2 current time bit 3 temperature correction (default = temperature,
	101.00		(i) (i) (ii) (ii) (ii) (ii) (ii) (ii) (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 1255
long push time	44 LSB	R,W EEPROM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu)	for editing of the time schedule and presence or fan mode [range 0.125.5 s]
ouper long puch	44 MCD	D W	(default = 1.5 s, 0x0F)	for actual time and
super long push time	44 MSB	R,W EEPROM	time (in 100 ms) evaluated as superlong push (go to settings menu)	for actual time and temperature settings [range 0.125.5 s]
			(default = 5 s, 0x32)	
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)



FC015 Fancoil controller

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		1-1-	Te	1
	47 LSB	R,W	fan states that user is able to	bit 0 Auto (fan + A)
mask	47 MSB	EEPROM	switch between	bit 1 Off (fan + M)
				bit 2 Man 1 (fan + M +
			(default = all, 0x001F)	Stage1)
			, , , , , , , ,	bit 3 Man 2 (fan + M +
				Stage1 and 2)
				bit 4 Man 3 (fan + M +
				Stage1, 2 and 3)
. , ,	48 LSB	R,W RAM	displayed symbols	bit 0 spanner
	48 MSB			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
DTO	40 L CD	DW	Dool time alook	attempt will be ignored)
	49 LSB	R,W	Real time clock	see table below;
	49 MSB	EEPROM		to write to those registers,
	50 LSB		(not subject to INIT command)	write to EEPROM must
	50 MSB			be enabled in the status
	51 LSB			LSB register
	51 MSB			
	52 LSB			
	52 MSB			
	53 LSB		reserved	
	53 MSB		reserved	
		D 14/		101 01 1
	54 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 1 time	54 MSB	EEPROM	event No. 1, in mins since 0:00	
			(midnight)	
			(default = 06:00 h, 0x0168)	
program Monday	55 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
	55 MSB	EEPROM	1, value	1 night/standby
			.,	2 off/depression
			(default = 0, 0x000)	bit 15 = 1 event is
			(default = 0, 0x000)	
	50 1 00	D 144		disabled
1. 0	56 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 2 time	56 MSB	EEPROM	event No. 2, in mins since 0:00	
			(midnight)	
			(default = 08:00 h,0x01E0)	
program Monday	57 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
	57 MSB	EEPROM	2, value	1 night/standby
	- · · · · · · · · · · · · · · · · · · ·			2 off/depression
			(default = 1, 0x0001)	bit 15 = 1 event is
			(derault - 1, 0x0001)	disabled
noncompact Maria de	E0 OD	DW	tipo o polo dula. Manada e tipo e ef	
	58 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 3 time	58 MSB	EEPROM	event No. 3, in mins since 0:00	
			(midnight)	
			(default = 14:00 h, 0x0348)	
program Monday	59 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
	59 MSB	EEPROM	3, value	1 night/standby
				2 off/depression
			(default = 0, 0x0000)	bit 15 = 1 event is
		1	(4514411 5, 57,000)	
				disabled



FC015 Fancoil controller

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Ml	00100	ID.W	tions and adults Manaday times 5	a = 404 Ob 4
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	e.g. 121 2h 1min
Event 4 time	OO IVISB	EEPROM	(midnight)	
			(default = 22:00 h, 0x0528)	
program Monday	61 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 4 value	61 MSB	EEPROM	4, value	1 night/standby 2 off/depression
			(default = 1, 0x0001)	bit 15 = 1 event is disabled
program Monday	62 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 5 time	62 MSB	EEPROM	event No. 5, in mins since 0:00 (midnight)	
			(default = 06:00 h, 0x0168)	
program Monday	63 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 5 value	63 MSB	EEPROM	5, value	1 night/standby 2 off/depression
			(default = disabled, 0x8000)	bit 15 = 1 event is disabled
program Monday	64 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 6 time	64 MSB	EEPROM	event No. 6, in mins since 0:00 (midnight)	
			(default = 06:00 h, 0x0168)	
program Monday	65 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 6 value	65 MSB	EEPROM	6, value	1 night/standby
				2 off/depression
			(default = disabled, 0x8000)	bit 15 = 1 event is disabled
program	66 LSB	R,W	time schedule, Tuesday, time of	e.g. 121 2h 1min
Tuesday Event 1 time	66 MSB	EEPROM	event No. 1, in mins since 0:00 (midnight)	
			(default = 06:00 h, 0x0168)	
program Sunday	137 LSB	R,W	time schedule, Sunday, event No.	0 day/comfort
Event 6 value	137 MSB	EEPROM	6, value	1 night/standby
			(default = disabled, 0x8000)	2 off/depression bit 15 = 1 event is
VAV minimum	138 LSB	R, W	minimum value for VAV box	disabled in 0.01 V
VAV HIIIIIIIIIIIII	138 MSB	EEPROM	(It is set for AQ controller output of	[range 0 V 10,00 V]
			Ò %.)	[
			(default = 3.0 V, 0x012C)	
AQ P Band	139 LSB	R, W	bandwidth of the Air quality	[range 1 5000 ppm]
	139 MSB	EEPROM	controller	
			(linearization between VAV min. and max. of 10 V)	
			(1000 ppm, 0x03E8)	
AQ set point	140 LSB	R, W	room CO ₂ setpoint	[range 0 5000 ppm]
	140 MSB	EEPROM	·	



FC015 Fancoil controller

Release 11.4.2014 ver. 01602

V4

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			seco	nds		secs	00-59
14 MSB	0	10xmins		minutes			mins	00-59		
15 LSB	0		10xhours	10xhours		hai	ırc		hours	00-23
15 LSB	U			10xhours hours						
15 MSB	0	0	0	0	0 day			day	01-07	
16 LSB	0	0	10xd	late	date			date	01-31	
16 MSB	0	0	0	10xmonth	month			month	01-12	
17 LSB		10x	year		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.





Release 16.6.2014 ver. 01000

V4

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 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)



FC020 Fancoil controller

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		1		T
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)	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; Dlx 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



FC020 Fancoil controller

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	10105	I D 14/ D		I o . c
manual control	10 LSB	R, W RAM	bits 02: 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 34: 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



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set night/ pre- comfort heating	16 LSB 16 MSB	R,W EEPROM	night/standby mode heating temperature setpoint	recalculate: temperature =
temp			set by user	read value / 100
			(default = 19°C, 0x076C)	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	recalculate: temperature = read value / 100
			(default = 12°C, 0x04B0)	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	recalculate: temperature = read value / 100
			(default = 24°C, 0x0960)	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	recalculate: temperature = read value / 100
			(default = 26°C, 0x0A28)	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	recalculate: temperature = read value / 100
			(default = 35°C, 0x0DAC)	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



FC020 Fancoil controller

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	T	1 =		Tana a sa
set presence	23 LSB	R,W	presence status set by user (if	bit 0 comfort / day
mode	23 MSB	EEPROM	inputs Presence and Window	bit 1 standby / night
			contact are enabled and active –	bit 2 off / depression
			see input settings -, they have	bit 3 auto (clock)
			priority over this register)	bit 4 party (sun + drink
				+ clock, after 2h goes to
			(default = comfort/day, 0x0001)	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	R, W,	fan status set by user	bit 0 Auto (fan + A)
	24 MSB	EEPROM	,	bit 1 Off (fan + M)
			(default = auto, 0x0001)	bit 2 Man 1 (fan + M +
			(actuality date, extending	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	25 LSB	R, RAM	actual mode used for control, if on	bit 0 comfort/day
mode	25 LSB	K, KAIVI	manual then the actual control	
mode				bit 1 standby/night
			mode is equal to set presence mode, if on auto then the actual	bit 2 off/depression
			control mode is according to time schedule	
roconyod	25 MSB	R, RAM	Scriedule	
reserved controller		· ·	controller configuration. If not as	hit 0 processes made (0
	26 LSB	R,W	controller configuration. If set as	bit 0 presence mode (0
settings		EEPROM	2-pipe, the C/O function is	- hotel, 1 - residential)
			enabled.	bit 1 setpoint shift
				display (0: relative, 1:
			(defaults = hotel, relative, fan is on	absolute temp.)
			at heat and cool, 3 stage fan,	bit 2 1 - stop fan when
			valve protection on, NC valves:	HEAT, 0 – fan allowed
			0x40)	when HEAT)
				bit 3 1 - stop fan when
				COOL, 0 – fan allowed
				when COOL)
		1		bits 4-5 fan type
				(00 – 3 stages, 01 – 2
				(00 – 3 stages, 01 – 2 stages, 10 – 1 stage)
				(00 – 3 stages, 01 – 2 stages, 10 – 1 stage) bit 6 valve exercising
				(00 – 3 stages, 01 – 2 stages, 10 – 1 stage) bit 6 valve exercising (1 – enabled)
				(00 – 3 stages, 01 – 2 stages, 10 – 1 stage) bit 6 valve exercising



FC020 Fancoil controller

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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
controller settings 2	29 LSB	R,W EEPROM	controller configuration, part 2. Limitation: Al1 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 Al1 sensor is not connected, limitation is not active and the UC010 sensor is the control sensor. Defaults: Al1, 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 - Al1 = limitation (00 - Al1 = limitation sensor, 01 - Al1 = control sensor, 10 - average (Al1, 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	D M/ DAM	200 100 100 100 100 100 100 100 100 100	Lughua in 9/ managa 0
AO1	30 LSB 30 MSB	R, W, RAM	analogue output 1 (010 V)	value in %, range 0 100%; same value as PID output HEAT
AO2	31 LSB 31 MSB	R, W, RAM	analogue output 2 (010 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 Al2	value / 100, 350 dec = 3.5 K



FC020 Fancoil controller

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min rel. temp	33 LSB	R,W	minimum relative user temperature	recalculate:
correction	33 MSB	EEPROM	correction, a positive value is	minimum correction
Correction	OO WOB	LLI KOM	saved and is taken as negative	= -(read value/100);
			limit	-10.00 1000
				10.00 1000
				(-3.5 °C, 0x015E)
max rel. temp	34 LSB	R,W	maximum relative user	recalculate:
correction	34 MSB	EEPROM	temperature correction	maximum correction =
00110011011	0102		temperature correction	(read value/100);
				10.00 1000
				(3.5 °C, 0x015E)
min day, night,	35 LSB	R,W	minimum temperature which user	recalculate:
depression temp	35 MSB	EEPROM	can set as setpoint for day, night,	temperature
			and off modes	= read value / 100
			-199.99 to 199.99	
				0 0
			(default = 10 °C, 0x03E8)	199.99 19999
			·	-0.01 0FFFFhex
				-199.99 0B1E1hex
max day, night,	36 LSB	R,W	maximum temperature which user	recalculate:
depression temp	36 MSB	EEPROM	can set as setpoint for day, night,	temperature
			and off modes	= read value / 100
			-199.99 to 199.99	
				0 0
			(default = 40 °C, 0x0FA0)	199.99 19999
				-0.01 0FFFFhex
tomp concer corr	37 LSB	R,W	correction: adds to the actual	-199.99 0B1E1hex recalculate:
temp sensor corr UC010	37 LSB 37 MSB	EEPROM	temperature measured by the	
00010	37 IVISB	EEPROW	room unit sensor	temperature = read value / 100
			TOOTH WHILE SENSOR	- read value / 100
			-20.00 to 20.00	0 0
			20.00 to 20.00	199.99 19999
			(default = -1,5 K, 0xFF6A)	-0.01 0FFFFhex
			(4014411 1,014, 674 1 674)	-199.99 0B1E1hex
pot min	38 LSB	R,W	lower setpoint limit for the	limit = value * 10
P • • • • • • • • • • • • • • • • • • •	38 MSB	EEPROM	potentiometer (AI2) in Ohm	
			, ,	400 = 40 Ohm
			default: 40 Ohm, 0x0190	
step temp	39 LSB	R,W	step for user temperature	step = read value / 100
Stop tomp		EEPROM	setpoints setting	Clop Toda value / Too
			- Stronico Sotting	1 0.01
			(default = 0.5 °C, 0x32)	50 0.5
			(11.00.1)	100 1 etc.
step minutes	39 MSB	R,W	time step for time schedule setting	in minutes
		EEPROM	, i i i i i i i i i i i i i i i i i i i	
			(default = 5 mins, 0x05)	
			, ,	
pot max	40 LSB	R,W	upper setpoint limit for the	limit = value * 10
	40 MSB	EEPROM	potentiometer (AI2) in Ohm	
				4700 = 470 Ohm
			default: 470 Ohm, 0x125C	
1				
<u>l</u>				



FC020 Fancoil controller

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show mode	41 LSB	R,W	data that roll on the LCD display	bit 0 temperature
Show mode	41 MSB	EEPROM	(default = 1, temperature)	bit 1 outside temp. =
			If only one of the bits is active	Al1 temperature at FC020
			there is only one value displayed.	bit 2 current time
			Otherwise they change	
			periodically after show time .	(default = temperature,
	40 1 00	D.144	(; (; 400))	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	time (in 100 ms) of user inactivity	
can retain time	42 WOD	EEPROM	to return from edit mode to show	
			mode (default = 30 s)	
quick edit mode	43 LSB	R,W	number of mode which is editable	0 push function inactive
number		EEPROM	through quick edit menu (short	1 presence mode
			push of the knob)	2 fan mode
			(defect)	
change over	43 MSB	R,W	(default = fan mode, 0x02) wait time between heating and	in minutes, range 1 255
change-over period	43 1/136	EEPROM	cooling modes after the C/O signal	In minutes, range 1 255
period			is received	
			16 16 66 17 6 4	
			(default = 30 min, 0x1E)	
long push time	44 LSB	R,W	time (in 100 ms) evaluated as long	for editing of the time
		EEPROM	push (go to time schedule menu /	schedule and presence or
			leave menu)	fan mode
			(default = 1.5 a. 0v0E)	
super long push	44 MSB	R,W	(default = 1.5 s, 0x0F) time (in 100 ms) evaluated as	for actual time and basic
time	TT WOD	EEPROM	superlong push (go to settings	setpoints settings
timo		LEI ITOM	menu)	ootponite oottinge
			,	
			(default = 5 s, 0x32)	
allowed	45 LSB	R,W	settings that user is able to	bit 0 temp corr.
operation modes	45 MSB	EEPROM	perform	bit 1 heating day temp
			0 disabled 1 enabled	bit 2 heating night
			1 enabled	temp bit 3 heating
			(default = temp corr, fan mode	depression temp
			0x0201)	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	46 LSB	R,W	states in presence mode that user	bit 0 day (sun +
edit mask	46 MSB	EEPROM	is able to switch between	occupied house)
				bit 1 night (moon +
			(default = all, 0x001F)	occupied house)
				bit 2 depression
				(empty house)
				bit 3 auto (clock)
				bit 4 party (sun + drink + clock, after 2h goes to
				auto)
				1 4410)



FC020 Fancoil controller

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	1	T=		11112
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 +
diantay aymbala	48 LSB	R, W, RAM	symbols that may be user	Stage 1,2) bit 4 Man 3 (fan + M + Stage 1,2,3) bit 0: spanner
display symbols	48 MSB	R, W, KAIVI	symbols that may be user- displayed on the UC010 LCD display NB: combination of spanner and alarm bell indicates	bit 0. spanner bit 1: boiler bit 2: alarm bell bit 3bit 14: reserved
			communication error between FC020 and UC010	
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	Al1 and Al2 range settings 1 – temperature (Pt1000) 2 – voltage (010 V) 3 – resistance (01600 Ohm) 4 – current (420 mA, a 120 Ohm external resistor necessary) 5 – resistance (05000 Ohm)	bits 03: Al1 bits 47: Al2 These settings are to be changed only if the FC020 is used as an I/O module. Values: see regs. Al1 and Al2 temperature is real value * 100 + 50 °C shift (20000dec = 150 °C) resistance 01600 Ohm is real value * 10 (16000dec = 1600 Ohm)
Range 2	53 MSB	R,W EEPROM	Al3 and Al4 range settings 1 – temperature (Pt1000) 2 – voltage (010 V) 3 – resistance (01600 Ohm) 4 – current (420 mA, a 120 Ohm external resistor necessary) 5 – resistance (05000 Ohm)	bits 03: AI3 bits 47: 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 01600 Ohm is real value * 10 (16000dec = 1600 Ohm)



FC020 Fancoil controller

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	1	T ==		
temp sensor	54 LSB	R,W	Temp. sensor correction (Pt1000	Recalculate:
corr. FC020	54 MSB	EEPROM	at Al1)	temperature
				= read value / 100
			-2020 K	
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
auxiliary temp	55 LSB	R,W	Auxiliary temp. sensor correction	Recalculate:
sensor corr.	55 MSB	EEPROM	(Pt1000 at Al4)	temperature
FC020			,	= read value / 100
			-2020 K	
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
limitation temp.	56 LSB	R,W	temperature for supply air	Recalculate:
heat	56 MSB	EEPROM	limitation, upper limit, see	temperature
			controller settings 2. The Al4	= read value / 100
			(limitation sensor) measured value	
			will not exceed the sum of actual	0 0
			room temperature and limitation	199.99 19999
			temp. heat.	-0.01 0FFFFhex
				-199.99 0B1E1hex
			Default = 10 K. (0x03E8)	
limitation temp.	57 LSB	R,W	temperature for supply air	Recalculate:
cool	57 MSB	EEPROM	limitation, lower limit, see	temperature
300.			controller settings 2. The Al4	= read value / 100
			(limitation sensor) measured value	. 344 74.45 / 100
			will not drop below actual room	0 0
			temperature minus limitation	199.99 19999
			temp. cool.	-0.01 0FFFFhex
				-199.99 0B1E1hex
			Default = 6 K. (0x0258)	
actual FC020	58 LSB	R, RAM	actual value of aux. temp sensor	Recalculate:
auxiliary temp.	58 MSB	,	at Al4 incl. correction (see	temperature
			secondary temp sensor corr	= read value / 100
			FC020)	. 344 74140 / 100
				0 0
			This temperature is for information	199.99 19999
			only and is not involved in the	-0.01 0FFFFhex
			control process.	-199.99 0B1E1hex
setpoint shift	59 LSB	R, RAM	setpoint correction, as set at Al2	Recalculate:
FC020	59 MSB	,	by a potentiometer. See pot .	temperature
5525	0005		correction for limits.	= read value / 100
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set fan mode	60 LSB	R, RAM	fan status set by user over Al3	bit 0 Auto
FC020	60 MSB		ian otatao oot by abor over 7410	bit 1 Off
. 5525			See register 148 for the resistor	bit 2 Man 1
			values for individual stages.	bit 3 Man 2
			values for marvidual stages.	bit 4 Man 3
				DIC T IVIGIT U



FC020 Fancoil controller

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	1	T = 1.1/ =		T=
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)	e.g. 121 2h 1min
			(default = 06:00 h, 0x0168)	
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)	e.g. 121 2h 1min
program Monday	65 LSB	R,W	(default = 08:00 h) time schedule, Monday, event No.	0 day/comfort
Event 2 value	65 MSB	EEPROM	2, value (default = 1)	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)	e.g. 121 2h 1min
	07:55	DV	(default = 14:00 h)	
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)	e.g. 121 2h 1min
program Monday	69 LSB	R,W	(default = 22:00 h) time schedule, Monday, event No.	0 day/comfort
Event 4 value	69 MSB	EEPROM	4, value (default = 1)	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)	e.g. 121 2h 1min
program Monday Event 5 value	71 LSB 71 MSB	R,W EEPROM	(default = 06:00 h, 0x0168) 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



FC020 Fancoil controller

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	I =	Ta	1
72 LSB 72 MSB	R,W EEPROM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight)	e.g. 121 2h 1min
		(default = 06:00 h)	
73 LSB 73 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value	0 day/comfort 1 night/standby 2 off/depression
		(default = disabled)	bit 15 = 1 event is disabled
74 LSB 74 MSB	R,W EEPROM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight)	e.g. 121 2h 1min
		(default = 06:00 h)	
•••			
137 LSB	R,W EEPROM	time schedule, Sunday, event No.	0 day/comfort 1 night/standby
137 WSB	LLI KOW	(default = disabled)	2 off/depression bit 15 = 1 event is disabled
146 LSB 146 MSB	R, RAM	Al1 value (control temperature sensor Pt1000)	Recalculate: temperature = read value / 100
			0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex
147 LSB 147 MSB	R, RAM	Al2 value (setpoint shift potentiometer)	Recalculate: temperature = read value / 100
			0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex
148 LSB 148 MSB	R, RAM	Al3 value (resistors to switch fan mode)	Recalculate: temperature = read value / 100
		0139 Ohm Off 140224 Ohm Stage 1 225329 Ohm Stage 2 330389 Ohm Stage 3 > 390 Ohm Auto	0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex
149 LSB 149 MSB	R, RAM	Al4 value (auxiliary temperature sensor Pt1000)	Recalculate: temperature = read value / 100
			0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex
1000 LSB 1000 MSB 1001 LSB 1001 MSB	R	uptime (s)	number of seconds after last power on / reset
	73 LSB 73 MSB 74 LSB 74 MSB 137 LSB 137 MSB 146 LSB 146 MSB 147 MSB 148 LSB 147 MSB 149 MSB 1000 LSB 1000 MSB 1001 LSB	73 LSB	72 MSB EEPROM event No. 6, in mins since 0:00 (midnight) (default = 06:00 h) T3 LSB R,W time schedule, Monday, event No. 6, value (default = disabled) 74 LSB R,W time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight) (default = 06:00 h) 137 LSB R,W time schedule, Sunday, event No. 6, value (default = disabled) 148 LSB R, RAM Al1 value (control temperature sensor Pt1000) 147 LSB R, RAM Al2 value (setpoint shift potentiometer) 148 LSB R, RAM Al3 value (resistors to switch fan mode) 0139 Ohm Off 140224 Ohm Stage 1 225329 Ohm Stage 2 330389 Ohm Stage 3 > 390 Ohm Auto 149 LSB R, RAM Al4 value (auxiliary temperature sensor Pt1000) 149 LSB R, RAM Al4 value (auxiliary temperature sensor Pt1000)



FC020 Fancoil controller

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V4

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			mir	iutes		mins	00-59
15 LSB	0		10xhours	10xhours	hours			hours	00-23	
13 L3b	U			TUXITOUTS						
15 MSB	0	0	0	0	0		day		day	01-07
16 LSB	0	0	10xd	late		dat	e		date	01-31
16 MSB	0	0	0	10xmonth	month			month	01-12	
17 LSB		10x	year		vear			vear	00-99	
17 MSB	0	0	0	0	0	0	0	0	not used	00



UC120 Dynamic room controller

(Release 21.9.2011 ver.12900)

V4

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	



UC120 Dynamic room controller

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EEPROM writes	6 LSB 6 MSB	R, EEPROM	number of EEPROM writing cycles (EEPROM initialization does not	
	O MOD		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	recalculate: temperature = read value / 100
			3.5°C reads 350 (limits are set in the min and max rel. temp correction registers)	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
				199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex



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set day/ comfort	15 LSB	R,W	day/comfort mode heating	recalculate:
heating temp	15 MSB	EEPROM	temperature setpoint	temperature =
			set by user	read value / 100
			(default = 21°C, 0x0834)	0 0 199.99 19999
				199.99 19999 -0.01 0FFFFhex
				-199.99 0B1E1hex
set night/ pre-	16 LSB	R,W	night/standby mode heating	recalculate:
comfort heating	16 MSB	EEPROM	temperature setpoint	temperature =
temp			set by user	read value / 100
			(default = 19°C, 0x076C)	0 0
				199.99 19999
				-0.01 0FFFFhex
	47100	D M	eff and the ation to an action	-199.99 0B1E1hex
set depression/ economy heating	17 LSB 17 MSB	R,W EEPROM	off mode heating temperature	recalculate:
temp	17 IVISB	EEPROW	setpoint set by user	temperature = read value / 100
temp			Set by user	Tead value / 100
			(default = 12°C, 0x04B0)	0 0
			(4014411 12 0, 0.0120)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set day/ comfort	18 LSB	R,W	day/comfort mode cooling	recalculate:
cooling temp	18 MSB	EEPROM	temperature setpoint	temperature =
			set by user	read value / 100
			(default = 24°C 0,0000)	0 0
			(default = 24°C, 0x0960)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set night/ pre-	19 LSB	R,W	night/standby mode cooling	recalculate:
comfort cooling	19 MSB	EEPROM	temperature setpoint	temperature =
temp			set by user	read value / 100
			(default = 26°C, 0x0A28)	0 0 199.99 19999
				-0.01 0FFFFhex -199.99 0B1E1hex
set depression/	20 LSB	R, W	off mode cooling temperature	recalculate:
economy cooling	20 MSB	EEPROM	setpoint	temperature =
temp			set by user	read value / 100
			(default = 35°C, 0x0DAC)	0 0
				199.99 19999
				-0.01 0FFFFhex
actual toma	21 LSB	R, RAM	actual temperature measured by	-199.99 0B1E1hex recalculate:
actual temp	21 LSB 21 MSB	r, raivi	actual temperature measured by the internal sensor incl. correction	temperature =
	Z I WIOD		(see corr temp)	read value / 100
			(coo con tomp)	TODA VAIGO / TOO
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
L		L	l	



UC120 Dynamic room controller

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actual autaida	22 CD		actual autoida tarananatura irrai	receleulete.
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	



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rogulator	26 CD	D W	controller configuration	hit O processes made
regulator settings	26 LSB	R,W EEPROM	controller configuration	bit 0 presence mode type (0 – hotel, 1 -
Settings		LLI KOW	(defaults = residential, absolute,	residential)
			valve status, valve protection on,	bit 1 temperature
			NC valves, correction reset, PI	correction display
			control, 0x53)	(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,	input configuration	bit 0 DI1 enabled
		EEPROM	DI1 – presence/window contact	bit 1 reserved
				bit 2 DI1 sense (0: NC,
			default: inputs enabled for control,	1: NO)
Dhard	07 1 00	D 14/	active when on, 0x05	bit 3 reserved
P band	27 LSB 27 MSB	R,W EEPROM	controller P-band (PI control mode) or hysteresis (on/off control	in 0.1 K
	27 10136	EEPROW	mode)	(2 K, 0x0014)
			mode)	
I const	28 LSB	R,W	controller I – constant; if out of	in seconds; if set to 0,
	28 MSB	EEPROM	bounds, a new recalculated value	integration part is
			is set after restart	disabled
				(60 min, 0x0E10)
	29 LSB		reserved	-/
	29 MSB			
	30 LSB		reserved	
	30 MSB			
	31 LSB 31 MSB		reserved	
			reconsed	
	32 LSB 32 MSB		reserved	
min rel. temp	33 LSB	R,W	minimum relative user temperature	recalculate:
correction	33 MSB	EEPROM	correction, a positive value is	minimum correction
			saved and is taken as negative	= -(read value/100);
			limit	-10.00 1000
				(0.5.00, 0.0455)
				(-3.5 °C, 0x015E)



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		T =	T	
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	recalculate: temperature = read value / 100
			(default = 10 °C, 0x03E8)	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	recalculate: temperature = read value / 100
			(default = 40 °C, 0x0FA0)	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	recalculate: temperature = read value / 100
			(default = -1,5 K, 0xFF6A)	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	step = read value / 100 1 0.01
			(default = 0.5 °C, 0x32)	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)	



UC120 Dynamic room controller

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quick edit mode	43 LSB	R,W	number of mode which is editable	0 push function inactive
number	140 LOD	EEPROM	through quick edit menu (short	1 presence mode
			push of the knob)	2 fan mode
-1	40 1400	D 14/	(default = 0x02)	i
change over	43 MSB	R,W EEPROM	time delay between heating and cooling mode	in minutes; range 1-255
period		EEFROW	(default 30 min; 0x1E)	
long push time	44 LSB	R,W	time (in 100 ms) evaluated as long	for editing of the time
liong paon anno		EEPROM	push (go to time schedule menu /	schedule and presence or
			leave menu)	fan mode
	44.1400	D 14/	(default = 1.5 s, 0x0F)	
super long push	44 MSB	R,W	time (in 100 ms) evaluated as	for actual time and basic
time		EEPROM	superlong push (go to settings menu)	setpoints settings
			menu)	
			(default = 5 s, 0x32)	
allowed	45 LSB	R,W	settings that user is able to	bit 0 temp corr.
operation modes	45 MSB	EEPROM	perform	bit 1 heating day temp
			0 disabled	bit 2 heating night
			1 enabled	temp
			(default - town com DTC time	bit 3 heating
			(default = temp corr, RTC time, presence mode, time programme	depression temp bit 4 cooling day temp
			0x0581)	bit 5 cooling hight temp
			oxeco:/	bit 6 cooling
				depression temp
				bit 7 RTC time
				bit 8 presence mode
				bit 9 reserved
	40 1 00	D 14/		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	bit 0 day (sun +
eait mask	46 MSB	EEPROM	is able to switch between	occupied house) bit 1 night (moon +
			(default = all, 0x001F)	occupied house)
			(derdait aii, excert)	bit 2 depression
				(empty house)
				bit 3 auto (clock)
				bit 4 party (sun + drink
				+ clock, after 2h goes to
	47 1 00		and the second	auto)
	47 LSB 47 MSB		reserved	
display symbols	48 LSB	R,W RAM	displayed symbols	bit 0 spanner
alopidy symbols	48 MSB	i c, v i V livi		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)



UC120 Dynamic room controller

(Release 21.9.2011 ver.12900)

RTC	49 LSB	R,W	Real time clock	see table;
	49 MSB	EEPROM		to write to those registers,
	50 LSB		(not subject to INIT command)	write to EEPROM must
	50 MSB			be enabled in the status
	51 LSB			LSB register
	51 MSB			
	52 LSB			
	52 MSB			
	53 LSB 53 MSB		reserved	
program Monday	54 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 1 time	54 MSB	EEPROM	event No. 1, in mins since 0:00	e.g. 121 211 1111111
Event i time	54 MSB	EEFROW	(midnight)	
			(manight)	
			(default = 06:00 h, 0x0168)	
program Monday	55 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 1 value	55 MSB	EEPROM	1, value	1 night/standby
				2 off/depression
			(default = 0)	bit 15 = 1 event is
	50105	D.W.		disabled
program Monday	56 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 2 time	56 MSB	EEPROM	event No. 2, in mins since 0:00	
			(midnight)	
			(default = 08:00 h)	
program Monday	57 LSB	R,W	time schedule, Monday, event No.	0 day/comfort
Event 2 value	57 MSB	EEPROM	2, value	1 night/standby
			,	2 off/depression
			(default = 1)	bit 15 = 1 event is
			,	disabled
program Monday	58 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 3 time	58 MSB	EEPROM	event No. 3, in mins since 0:00	
			(midnight)	
			(dofault = 14:00 b)	
program Monday	59 LSB	R,W	(default = 14:00 h) time schedule, Monday, event No.	0 day/comfort
Event 3 value	59 LSB	EEPROM	3, value	1 night/standby
LVCIII 3 Value	33 WOD	LLI KOW	o, value	2 off/depression
			(default = 0)	bit 15 = 1 event is
			(30.33.31 2)	disabled
program Monday	60 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 4 time	60 MSB	EEPROM	event No. 4, in mins since 0:00	
			(midnight)	
			(default = 22:00 h)	
program Monday	61 LSB	R,W	(default = 22:00 h)	0 day/comfort
Event 4 value	61 MSB	EEPROM	time schedule, Monday, event No. 4, value	1 night/standby
LVGIR 4 VAIUC	OT WISD	LLI IXOIVI	T, value	2 off/depression
			(default = 1)	bit 15 = 1 event is
			(*	disabled
program Monday	62 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 5 time	62 MSB	EEPROM	event No. 5, in mins since 0:00	
			(midnight)	
			(1.5.14.00.001.0.0100)	
			(default = 06:00 h, 0x0168)	



UC120 Dynamic room controller

(Release 21.9.2011 ver.12900)

V4

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
13 LSD	15 LSB 0			TUXITOUTS						
15 MSB	0	0	0	0	0		day		day	01-07
16 LSB	0	0	10xd	ate	date			date	01-31	
16 MSB	0	0	0	10xmonth	month			month	01-12	
17 LSB		10x	year		•	V	ear		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.





Release 16.5.2012 ver. 13200

V4

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 (1active)	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	



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EEPROM writes	6 LSB	R, EEPROM	number of EEPROM writing	
LLI NOW WINES	6 MSB	IX, ELI IXOIVI	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	recalculate: temperature = read value / 100
			3.5°C reads 350 (limits are set in the min and max rel. temp correction registers)	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



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



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	04 1 05	D D 114	I a street to see a see	Landard
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
set fan mode	24 LSB	R,W	fan mode set by user	attempt will be ignored) bit 0 Auto (fan + A)
	24 MSB	EÉPROM	(default = auto, 0x0001)	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



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	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	



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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)



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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)	0 push function inactive 1 presence mode 2 fan mode
change over period	43 MSB	R,W EEPROM	(default = 0x02; fan mode) 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)



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display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols Real time clock	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) see table;
	49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB 53 LSB	EEPROM	(not subject to INIT command)	to write to those registers, write to EEPROM must be enabled in the status LSB register
	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)	e.g. 121 2h 1min
program Monday	55 LSB	R,W	(default = 06:00 h, 0x0168) time schedule, Monday, event No.	0 day/comfort
Event 1 value	55 MSB	EEPROM	1, value (default = 0, 0x0000)	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)	e.g. 121 2h 1min
program Monday	57 LSB	R,W	(default = 08:00 h, 0x01E0) time schedule, Monday, event No.	0 day/comfort
Event 2 value	57 MSB	EEPROM	2, value (default = 1, 0x0001)	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)	e.g. 121 2h 1min
program Monday	59 LSB	R,W	(default = 14:00 h, 0x0348) time schedule, Monday, event No.	0 day/comfort
Event 3 value	59 MSB	EEPROM	3, value (default = 0, 0x0000)	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)	e.g. 121 2h 1min
program Monday	61 LSB	R,W	(default = 22:00 h, 0x0528) time schedule, Monday, event No.	0 day/comfort
Event 4 value	61 MSB	EEPROM	4, value (default = 1, 0x0001)	1 night/standby 2 off/depression bit 15 = 1 event is disabled



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program Monday	62 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 5 time	62 MSB	EEPROM	event No. 5, in mins since 0:00 (midnight)	C.g. 121 211 111111
			(default = 06:00 h, 0x0168)	
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)	e.g. 121 2h 1min
			(default = 06:00 h, 0x0168)	
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value	0 day/comfort 1 night/standby 2 off/depression
			(default = disabled, 0x8000)	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)	e.g. 121 2h 1min
			(default = 06:00 h, 0x0168)	
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.



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Real time table

Addr.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function
14 LSB			10xsecs			seconds			
14 MSB	0		10xmins		minutes				mins
15 LSB 0			10xhours	xhours 10xhours		houre			
13 L3D	13 L3B 0			TOXITOUTS	hours				
15 MSB	0	0	0	0	0	day			day
16 LSB	0	0	10xd	ate	date				date
16 MSB	0	0	0	0 10xmonth month					month
17 LSB		10x	year		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.





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V4

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 (1active)	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	



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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	recalculate: temperature = read value / 100 0 0 199.99 19999 -0.01 0FFFFhex
			rel. temp correction registers)	-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



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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



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	04 1 05	D D 114	Lastical Access of the Control of th	
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
set fan mode	24 LSB	R,W	fan mode set by user	attempt will be ignored) bit 0 Auto (fan + A)
	24 MSB	EEPROM	(default = auto, 0x0001)	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



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	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 30 LSB		reserved reserved	
	30 MSB 31 LSB 31 MSB		reserved	



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	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)
	04100	D.W.		
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)
	05100	5.14		
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	recalculate: temperature = read value / 100
			(default = 10 °C, 0x03E8)	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	recalculate: temperature = read value / 100
			(default = 40 °C, 0x0FA0)	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	recalculate: temperature = read value / 100
			(default = -1,5 K, 0xFF6A)	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	step = read value / 100
			(default = 0.5 °C, 0x32)	1 0.01 50 0.5 100 1 etc.
step minutes	39 MSB	R,W EEPROM	time step for time schedule setting	in minutes
	40 LSB 40 MSB		(default = 5 mins, 0x05) 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)



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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)	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R,W EEPROM	(default = 1.5 s, 0x0F) time (in 100 ms) evaluated as superlong push (go to settings menu)	for actual time and basic setpoints settings
allowed operation modes	45 LSB 45 MSB	R,W EEPROM	(default = 5 s, 0x32) 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)



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display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols Real time clock	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) see table;
	49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB 53 LSB	EEPROM	(not subject to INIT command)	to write to those registers, write to EEPROM must be enabled in the status LSB register
	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)	e.g. 121 2h 1min
program Monday	55 LSB	R,W	(default = 06:00 h, 0x0168) time schedule, Monday, event No.	0 day/comfort
Event 1 value	55 MSB	EEPROM	1, value (default = 0, 0x0000)	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)	e.g. 121 2h 1min
program Monday	57 LSB	R,W	(default = 08:00 h, 0x01E0) time schedule, Monday, event No.	0 day/comfort
Event 2 value	57 MSB	EEPROM	2, value (default = 1, 0x0001)	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)	e.g. 121 2h 1min
program Monday	59 LSB	R,W	(default = 14:00 h, 0x0348) time schedule, Monday, event No.	0 day/comfort
Event 3 value	59 MSB	EEPROM	3, value (default = 0, 0x0000)	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)	e.g. 121 2h 1min
program Monday	61 LSB	R,W	(default = 22:00 h, 0x0528) time schedule, Monday, event No.	0 day/comfort
Event 4 value	61 MSB	EEPROM	4, value (default = 1, 0x0001)	1 night/standby 2 off/depression bit 15 = 1 event is disabled



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program Monday	62 LSB	R,W	time schedule, Monday, time of	e.g. 121 2h 1min
Event 5 time	62 MSB	EEPROM	event No. 5, in mins since 0:00 (midnight)	C.g. 121 211 111111
			(default = 06:00 h, 0x0168)	
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
			, i	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)	e.g. 121 2h 1min
			(default = 06:00 h, 0x0168)	
program Monday Event 6 value	65 LSB 65 MSB	R,W EEPROM	time schedule, Monday, event No. 6, value	0 day/comfort 1 night/standby 2 off/depression
			(default = disabled, 0x8000)	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)	e.g. 121 2h 1min
			(default = 06:00 h, 0x0168)	
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.



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V4

Real time table

Addr.	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function
14 LSB			10xsecs			seconds			
14 MSB	0		10xmins			minutes			mins
15 LSB	0		10xhours	10xhours		hours			
13 L3D	U			TOXITOUTS	hours				
15 MSB	0	0	0	0	0	day			day
16 LSB	0	0	10xd	ate		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.



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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	



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EEPROM writes	6 LSB	R, EEPROM	number of EEPROM write cycles	
6 MSB		(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	
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



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		T =	T	T
set day/ comfort	15 LSB	R,W	day/comfort mode heating	recalculate:
heating temp	15 MSB	EEPROM	temperature setpoint	temperature =
,			set by user	read value / 100
			(default = 21°C, 0x0834)	0 0
			(default = 21°C, 0x0034)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set night/ pre-	16 LSB	R,W	night/standby mode heating	recalculate:
comfort heating	16 MSB	EEPROM	temperature setpoint	temperature =
temp			set by user	read value / 100
tomp			cot 27 dec.	1000 1000 100
			(default = 10°C 0v076C)	0 0
			(default = 19°C, 0x076C)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set depression/	17 LSB	R,W	off mode heating temperature	recalculate:
economy heating	17 MSB	EEPROM	setpoint	temperature =
temp			set by user	read value / 100
.5			33. 5, 433.	
			(default = 13°C (v)(4BO)	0 0
			(default = 12°C, 0x04B0)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set day/ comfort	18 LSB	R,W	day/comfort mode cooling	recalculate:
cooling temp	18 MSB	EEPROM	temperature setpoint	temperature =
			set by user	read value / 100
			(default = 24°C, 0x0960)	0 0
			(default = 24°C, 0x0900)	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
set night/ pre-	19 LSB	R,W	night/standby mode cooling	recalculate:
comfort cooling	19 MSB	EEPROM	temperature setpoint	temperature =
temp			set by user	read value / 100
			(default = 26°C, 0x0A28)	0 0
			, , , , , , , , , , , , , , , , , , , ,	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
not depression/	30 I CD	D W	off made eacling towns and the	
set depression/	20 LSB	R, W	off mode cooling temperature	recalculate:
economy cooling	20 MSB	EEPROM	setpoint	temperature =
temp			set by user	read value / 100
			(default = 35°C, 0x0DAC)	0 0
			,	199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
actual temp	21 LSB	R, RAM	actual temperature measured by	recalculate:
Jordan tomp	21 MSB	,	the internal sensor incl. correction	temperature =
	Z I IVIOD			
			(see corr temp)	read value / 100
				0 0
				199.99 19999
				-0.01 0FFFFhex
				-199.99 0B1E1hex
i e	1	1	1	1



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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
regulator settings	25 MSB 26 LSB	R,W EEPROM	reserved 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)



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input settings	26 MSB	R, W, EEPROM	input configuration DI1 – presence	bit 0 DI1 enabled bit 1 DI2 enabled
			DI2 – window contact default: inputs enabled for control,	bit 2 DI1 sense (0: NC, 1: NO) bit 3 DI2 sense (0: NC,
			active when on, 0x0F	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 setpoint)	in 0.1 K (2 K, 0x0014)
I const	28 LSB 28 MSB			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	recalculate: temperature = read value / 100
			(default = 10 °C, 0x03E8)	0 0 199.99 19999 -0.01 0FFFFhex -199.99 0B1E1hex



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max day, night, depression temp 36 MSB R,W EEPROM maximum temperature which user can set as setpoint for day, night, and off modes = read vertical records and recor				
and off modes = read v	recalculate:			
	raiue / 100			
	0 0			
	19999			
	19999 . 0FFFFhex			
	0B1E1hex			
sensor corr temp 37 LSB R,W correction: adds to the actual recalcul				
37 MSB EEPROM temperature measured by the temperature				
	/alue / 100			
-20.00 to 20.00				
0 0				
	19999			
	. 0FFFFhex			
	0B1E1hex			
38 LSB reserved				
38 MSB				
	ead value / 100			
EEPROM setpoints setting				
1 0.0				
(default = 0.5 °C, 0x32) 50 0.				
100				
step minutes 39 MSB R,W time step for time schedule setting in minut	tes			
EEPROM (defeate 5 mins 0.05)				
(default = 5 mins, 0x05)				
40 LSB reserved				
40 MSB				
	temperature			
	outside temp.			
	current time			
there is only one value displayed. Otherwise they change (default	= temperature			
periodically after show time . 0x0001	= temperature,			
	ow mode			
EEPROM value in show mode (default = 3 s,				
0x1E)				
edit return time 42 MSB R,W time (in s) of user inactivity to				
EEPROM return from edit mode to show				
mode (default = 30 s, 0x1E)				
	sh function inactive			
number EEPROM through quick edit menu (short 1 pre	sence mode			
push of the knob) 2 fan	mode			
(default = 0x02)				
43 MSB reserved				
long push time 44 LSB R,W time (in 100 ms) evaluated as long for editing	ng of the time			
	e and presence or			
	-			
leave menu) fan mod				
leave menu) fan mod				
(default = 1.5 s, 0x0F)				
(default = 1.5 s, 0x0F) super long push	al time and basic			
(default = 1.5 s, 0x0F) super long push 44 MSB R,W time (in 100 ms) evaluated as for actual superlong push (go to settings setpoint	al time and basic ts settings			
(default = 1.5 s, 0x0F) super long push 44 MSB R,W time (in 100 ms) evaluated as for actual				
(default = 1.5 s, 0x0F) super long push 44 MSB R,W time (in 100 ms) evaluated as for actual superlong push (go to settings setpoint				



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0 2011 ver 12000

allowed	45 LSB	R,W	settings that user is able to	bit 0 temp corr.			
operation modes	45 LSB 45 MSB		perform	bit 1 heating day temp			
operation modes	+5 WOD	LEI KOW	0 disabled	bit 2 heating day temp			
		1 enabled	temp				
			i chabica	bit 3 heating			
			(default = temp corr 0v0001)				
			(default = temp corr, 0x0001)	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			
nrocence mode	46 L CD	D.W	atatas in processos mode that year	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	bit 0 day (sun +			
euit mask	40 WSB	EEPKUW	is able to switch between	occupied house)			
			(default = all_0v0015)	bit 1 night (moon +			
			(default = all, 0x001F)	occupied house)			
				bit 2 depression (empty house)			
				bit 3 auto (clock)			
				bit 4 party (sun + drink			
				+ clock, after 2h goes to			
				auto)			
	47 LSB		reserved	auto)			
	47 LSB 47 MSB		10001 VCu				
display symbols	48 LSB	R,W RAM	displayed symbols	bit 0 spanner			
, , ,	48 MSB			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			
		1		be ignored)			
RTC	49 LSB	R,W	Real time clock	see table;			
	49 MSB	EEPROM		to write to those registers,			
	50 LSB		(not subject to INIT command)	write to EEPROM must			
	50 MSB			be enabled in the status			
	51 LSB			LSB register			
	51 MSB						
	52 LSB						
	52 MSB	1	una na muna d				
	53 LSB 53 MSB		reserved				
program Monday		R,W	time schedule, Monday, time of	e.g. 121 2h 1min			
Event 1 time	54 MSB	EEPROM	event No. 1, in mins since 0:00	0.9. 121 211 1111111			
	31,11100		(midnight)				
			(
	55105	 D.W.	(default = 06:00 h, 0x0168)	0 devices (
program Monday		R,W	time schedule, Monday, event No.	0 day/comfort			
Event 1 value	55 MSB	EEPROM	1, value	1 night/standby			
			(dofolt = 0)	2 off/depression			
			(default = 0)	bit 15 = 1 event is			
				disabled			



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



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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	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				00-59
14 MSB	0		10xmins		minutes			mins	00-59	
15 LSB	0		10xhours	10xhours	h a come			hours	00-23	
15 LSB	U			TUXIIOUIS		hours				
15 MSB	0	0	0	0	0 day			day	01-07	
16 LSB	0	0	10xd	late	date			date	01-31	
16 MSB	0	0	0	10xmonth	month				month	01-12
17 LSB		10×	year		year				vear	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 Heating controller with blinds control

V4

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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			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 (1active)			
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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199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex

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



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set day/ comfort **15 LSB** R.W day/comfort mode heating recalculate: temperature = heating temp **15 MSB EEPROM** temperature setpoint read value / 100 set by user 0 ... 0 $(default = 21^{\circ}C, 0x0834)$ 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex 16 LSB R,W night/standby mode heating set night/ prerecalculate: comfort heating 16 MSB **EEPROM** temperature setpoint temperature = temp set by user read value / 100 0 ... 0 $(default = 19^{\circ}C, 0x076C)$ 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex set depression/ **17 LSB** R.W off mode heating temperature recalculate: economy heating 17 MSB **EEPROM** temperature = setpoint set by user read value / 100 temp $(default = 12^{\circ}C, 0x04B0)$ 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex set day/ comfort 18 LSB R,W day/comfort mode cooling recalculate: cooling temp **18 MSB EEPROM** temperature setpoint temperature = set by user read value / 100 0 ... 0 $(default = 24^{\circ}C, 0x0960)$ 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex R.W set night/ pre-19 LSB night/standby mode cooling recalculate: comfort cooling **19 MSB EEPROM** temperature setpoint temperature = set by user read value / 100 temp 0 ... 0 $(default = 26^{\circ}C, 0x0A28)$ 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1<u>E1hex</u> R. W set depression/ **20 LSB** off mode cooling temperature recalculate: economy cooling 20 MSB **EEPROM** setpoint temperature =



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actual outside **22 LSB** R, W RAM actual outside temperature, may recalculate: temperature = **22 MSB** be written to RAM optionally for temp display read value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex presence status set by user bit 0 ... comfort (occupied set presence 23 LSB R,W mode **23 MSB EEPROM** (displayed symbols depend on the house) or day (sun + configuration register regulator occupied house) settings, if set to hotel then bit 1 ... standby (empty comfort, standby, off; if set to house) or night (moon + residential then day, night, occupied house) depression, auto, party) bit 2 ... off (off) or depression (empty house) (default = comfort/day, 0x0001) 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 reserved **24 MSB** bit 0 ... comfort/day actual control 25 LSB R. RAM actual mode used for control, if on mode manual then the actual control bit 1 ... standby/night mode is equal to set presence bit 2 ... off/depression 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)

reserved

25 MSB



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



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whole position **30 LSB** R.W. time of transit time between Up in secs, 1...255 **EEPROM** and Down positions time (default: 70 s, 0x46) 30 MSB time to distinguish between short R, W, switch short in 0.1 s **EEPROM** and long push for blinds control time (short: rotation by move short time, long – transit to end position) (default: 0.5 s, 0x05) move short time 31 LSB R, W, time to rotate the blinds when in 0.1 s, 1...25.5 s **EEPROM** short push (default: 0.2 s, 0x02) waiting time pause time between up and down in 0.1 s. 0.6 ... 3.0 s **31 MSB** R.W. **EEPROM** up/down direction change - to protect the motors (default: 0.7 s, 0x07) 32 LSB reserved 32 MSB 33 LSB R,W recalculate: min rel. temp minimum relative user temperature correction **33 MSB EEPROM** correction, a positive value is minimum correction saved and is taken as negative = -(read value/100); limit -10.00 ... 1000 (-3.5 °C, 0x015E) max rel. temp **34 LSB** R.W maximum relative user recalculate: **EEPROM** correction **34 MSB** temperature correction maximum correction = (read value/100); 10.00 ... 1000 (3.5 °C, 0x015E) 35 LSB R.W minimum temperature which user min day, night, recalculate: 35 MSB **EEPROM** can set as setpoint for day, night, temperature depression temp and off modes = read value / 100 -199.99 to 199.99 0 ... 0 199.99 ... 19999 (default = 10 °C, 0x03E8)-0.01 ... 0FFFFhex -199.99 ... 0B1E1hex max day, night, 36 LSB R,W maximum temperature which user recalculate: depression temp **EEPROM** 36 MSB can set as setpoint for day, night, temperature and off modes = read value / 100 -199.99 to 199.99 0 ... 0 199.99 ... 19999 (default = 40 °C, 0x0FA0)-0.01 ... 0FFFFhex -199.99 ... 0B1E1hex 37 LSB R,W correction: adds to the actual recalculate: sensor corr temp **EEPROM** 37 MSB temperature measured by the temperature internal sensor = read value / 100 -20.00 to 20.00 0 ... 0 199.99 ... 19999 (default = -1.5 K, 0xFF6A)-0.01 ... 0FFFFhex -199.99 ... 0B1E1hex



US100 Heating controller with blinds control

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bit 8 ... presence mode bit 9 ... reserved

bit 10 ... time programme

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



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

(default = 14:00 h)



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number of seconds after

last power on / reset

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

uptime (s)

uptime

1000 LSB

1000 MSB

1001 LSB 1001 MSB R



US100 Heating controller with blinds control

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and a non-zero value is written to this register.		reset	1002 LSB 1002 MSB	W, RAM		
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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				00-59	
15 LSB	0		10xhours	10xhours		house				00-23	
13 L3B	U			TUXIIUUIS	hours						
15 MSB	0	0	0	0	0 day				day	01-07	
16 LSB	0	0	10xc	late	date				date	01-31	
16 MSB	0	0	0	10xmonth	month				month	01-12	
17 LSB		10×	year		vear			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.