

UC 010/011(/DK)(BL)_RL modbus – fancoil controller (together with FC010 or FC020 forms controller (it can not be used separately)) – knob, LCD, tempeature, humidity, 1 × RS485 (UC011 has galvanically separated communication)

UC 013 (/DK)(BL)_RL modbus – fancoil controller (together with FC013 forms controller (it can not be used separately)) – knob, LCD, tempeature, humidity, 1 × RS485

BL variant has LCD and knob backlight

DK variant does not include LCD nor knob

- max 55 words may be read out as a whole (i.e. 110 bytes)
- whole range can be addressed bitwise
- for values saved in EEPROM defaults are in parentheses

name	address	type	description	note
module ID	1 LSB 1 MSB	R	Module identification	Module ID: UC 010 ... 0328hex UC 010/DK... 032Ehex UC 010BL ... 0329hex UC 011 ... 032Ahex UC 011/DK... 0330hex UC 011BL ... 032Bhex UC 013 ... 032Chex UC 013/DK... 0333hex UC 013BL ... 032Dhex
firmware	2 LSB 2 MSB	R	FW version	
status LSB	3 LSB	R, W RAM	Module status lower byte bit 0 – EEPROM write enable bit 4 – EEPROM init bit 5 – reset flag RESET bit 6 – FC 020 mode ON (otherwise FC 010)	EEPROM init is enabled when the INIT switch was ON at power-up, and switched OFF before bit 4 was set to 1 (indicated by bit 2 in status MSB).

status MSB	3 MSB	R, RAM	<p>module status upper byte</p> <p>bit 0 - 0 normal mode - 1 init mode</p> <p>bit 1 - 1 at the next EEPROM write attempt all data will be saved to EEPROM - 0 at the next write attempt received data will be written to RAM only</p> <p>bit 2 - 1 - EPROM init</p> <p>bit 3 - 1 - reserved</p> <p>bit 4 - RESET flag</p> <p>bit 5 - FC 020 mode</p> <p>bit 6 - 0</p> <p>bit 7 - 1</p>	bit 5 - FC 020 mode - registers 8, 9 are writable
address	4 LSB	R,W eeprom (0x01)	Module address	!!! The changes will become active only after module restart (the register is written immediately, the new address is effective after restart)
baud rate (comm speed)	4 MSB	R,W eeprom (9600 bps, 13dec)	<p>No parity</p> <p>10_{dec} ... 1 200bps</p> <p>11_{dec} ... 2 400bps</p> <p>12_{dec} ... 4 800bps</p> <p>13_{dec} ... 9 600bps</p> <p>14_{dec} ... 19 200bps</p> <p>15_{dec} ... 38 400bps</p> <p>16_{dec} ... 57 600bps</p> <p>17_{dec} ... 115 200bps</p>	!!! The changes will become active only after module restart (the register is written immediately, the new baud rate is effective after restart)
serial port settings	5 LSB	R,W eeprom (no parity, one stop bit, 0x00)	serial line parameter settings	<p>bit 0-1 ... parity (00 - no parity, 01 - even, 10 - odd)</p> <p>bit 2 ... number of stop bits (0 - one, 1 - two)</p> <p>!! The changes will become active only after module restart</p>
	5 MSB		reserved	
	6 LSB 6 MSB		reserved	
	7 LSB		reserved	



inputs	7 MSB	R, W RAM	Digital inputs status (DI1 ... presence, DI2 ... window/alarm contact) and heating/cooling demands; DI1 and DI2 state – logical (active/inactive) or physical state (voltage on/voltage off) - see register regulator settings 2, bit 6; logical state takes into account settings from inputs settings register, if system includes FC010 slaves, they are already in that register. The master controller inputs must be enabled (see inputs settings) to include slave module inputs.	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, (W) RAM	heating controller output (PID output, or value from manual control; writing for FC 020 mode)	in %, 0...100 %
pid output COOL	8 MSB	R, (W) RAM	cooling controller output or changeover mode C/O (PID output, or value from manual control; writing for FC 020 mode)	in %, 0...100 %
pid fan speed	9 LSB	R, (W) RAM	fan speed state (PID output, or value from manual control; writing for FC 020 mode)	0 ... off 1 ... fan speed 1 2 ... fan speed 2 3 ... fan speed 3
UC internal status	9 MSB	R, W RAM	Controller module status – for communication with module FC 0x0 (if communication fails for 60 secs, alarm bell is displayed and anything can not be set)	bit 0 ... change in progress (entries from FC are ignored, set and reset by UC) bit 1 ... values changed (set by UC, reset by FC) bit 2 ... time schedule change (set by UC, reset by FC) bit 3 ... RTC change (set by UC, reset by FC) bit 4 ... factory mode (set and reset by UC)

manual control	10 LSB	R, W RAM	Manual output control and changeover (C/O)	bit 0 ... 4 ... reserved bit 5 ... C/O (1 - C/O active)
	10 MSB		reserved	
actual rh	11 LSB 11 MSB	R, RAM	actual measured humidity including sensor correction (see rh sensor corr)	signed 16bit registr [in 0,01 %]
set temp correction	12 LSB 12 MSB	R, W RAM	actual relative temperature correction, resets at each operation mode change (limits are set in the min a max rel. temp correction registers)	recalculate: set temperature correction = read value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
actual temp set point HEAT	13 LSB 13 MSB	R, RAM	actual heating setpoint including setpoint correction	recalculate: set 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 including setpoint correction	recalculate: set 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 RAM	day/comfort mode heating temperature setpoints set by user	recalculate: set temperature = read value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
set night/precomfort heating temp	16 LSB 16 MSB	R, W RAM	night/depression mode heating temperature setpoint set by user	recalculate: set temperature = read value / 100 1 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex

set depression/ economy heating temp	17 LSB 17 MSB	R, W RAM	depression/economy mode heating temperature setpoint set by user	recalculate: set 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 RAM	day/comfort mode cooling temperature setpoints set by user	recalculate: set temperature = read value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
set night/ precomfort cooling temp	19 LSB 19 MSB	R, W RAM	night/depression mode cooling temperature setpoint set by user	recalculate: set 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 RAM	depression/economy mode heating temperature setpoint set by user	recalculate: set temperature = read value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
actual temp	21 LSB 21 MSB	R, RAM	actual temperature measured by internal sensor including correction (see temp sensor corr)	recalculate: actual temperature = (read value +correction)/ 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 (thermometer symbol will be shown on the display)	recalculate: actual temperature = (read value +correction)/ 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex

set presence mode	23 LSB 23 MSB	R, W RAM	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 than day, night, depression, auto, party)	bit 0 ... comfort (occupied house) <i>or</i> day (sun + occupied house) bit 1 ... depression (empty house) <i>or</i> night (moon + occupied house) bit 2 ... economy (off) <i>or</i> depression (house) bit 3 ... auto (clock) – <i>only when residential</i> bit 4 ... party (sun + drink + clock, after 2h goes to auto) – <i>only when residential</i>
set fan mode	24 LSB 24 MSB	R, W RAM	fan status set by user; if the fan is on Manual OFF the cooling/heating valves are closed	bit 0 ... auto (fan + A) bit 1 ... off (fan + M) bit 2 ... man 1 (fan + M + stage 1) bit 3 ... man 2 (fan + M + stage 1 and 2) bit 4 ... man 3 (all except A)
actual regulation 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, depression, economy; if set to residential then day, night, depression, auto, party)	bit 0 ... comfort/day bit 1 ... depression/night bit 2 ... economy/depression
	25 MSB		reserved	



regulator settings	26 LSB	R, W RAM	Controller configuration; if used and function "stop fan when heat/cool" is active, fan speed is always off (even on manual)	bit 0 ... presence mode (0 - hotel, 1 - residential) bit 1 ... temperature correction (0- relative, 1-absolute) bit 2 ... stop fan when HEATing (0 - disabled) bit 3 ... stop fan when COOLing (0 - disabled) bit 4-5 ... fan speed type (00 - speed 3, 01 - speed 2, 10 - speed 1) bit 6 ... valve exercising (1 - enabled) bit 7 ... valve polarity (0 - NC, 1 - NO)
inputs settings (inputs enable, inputs logic)	26 MSB	R, W RAM	inputs configuration DI1 ... presence DI2 ... window contact	bit 0 ... enable DI1 for controller function bit 1 ... enable DI2 for controller function bit 2 ... DI1 input logic (0- NC- normally close, 1-NO- normally open) bit 3 ... DI2 input logic (0- NC - normally close, 1- NO-normally open)
P band	27 LSB 27 MSB	R, W RAM	Controller P-band	in 0.1 K
I const	28 LSB 28 MSB	R, W RAM	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



regulator settings 2	29 LSB	R, W RAM	controller configuration, part 2	<p>bit 0 ... fan speed reset into AUTO mode if presence mode changes (TPG change, user, modbus)</p> <p>bit 1 ... enable slave mode (will not actively communicate with UC010)</p> <p>bit 2 ... DI2 as alarm input (rather than window contact), switches off all outputs when active</p> <p>bit 3 ... temperature correction reset when presence mode changes</p> <p>bit 4 ... control mode (0 - PI, 1 - On-Off)</p> <p>bit 5 ... reserved</p> <p>bit 6 ... logical/physical input (0 - logical, 1 - physical)</p> <p>bit 7 ... fancoil type (0 - 2-pipe, 1 - 4-pipe)</p>
	29 MSB		reserved	
	30 LSB 30 MSB		reserved	
latch enable	31 LSB	R, W RAM	<p>Latch enable function for individual inputs: By writing 1 into the register the particular bit in the latched value register is set to 0 and is kept until the required value is caught. After reset the whole register is set to 0.</p>	<p>Resetting of the individual caught 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)</p>
	31 MSB		reserved	



latched values	32 LSB	R RAM	Latched 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 RAM	minimum relative temperature correction set by user, a positive value is saved and taken as negative one	recalculate: min correction = -(read value/100); -10.00 ... 1000
max rel. temp correction	34 LSB 34 MSB	R, W RAM	maximum relative temperature correction set by user	recalculate: max corection = (read value/100); 10.00 ... 1000
min day, night, depression temp	35 LSB 35 MSB	R, W RAM	minimum temperature which user can set as setpoint for day, night and off modes 199.99 to 199.99	recalculate: min temperature = read value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
max day, night, depression temp	36 MSB 36 MSB	R, W RAM	maximum temperature which user can set as setpoint for day, night and off modes -199.99 to 199.99	recalculate: max temperature = read value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
temp sensor corr	37 MSB 37 MSB	R, W RAM	temperature sensor correction -20.00 to 20.00	recalculate: temperature correction = real value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
latch state	38 LSB	R, W RAM	States that will be latched 0 –log. 0 will be latched 1 – log. 1 will be latched	bit 0 is input 1 bit 1 is input 2



presence off delay	38 MSB	R,W eeprom (0 minutes, 0x00)	time delay after presence signal off (by DI1), (since change of state)	[0 .. 255 minutes]
step temp	39 LSB	R, W RAM	Step for temperature settings in time schedule and all temperatures	real step = read number/100 10 ... 0.1 100 ... 1
step minutes	39 MSB	R, W RAM	time step for time schedule setting	in minutes
	40 LSB 40 MSB		reserved	
show mode	41 LSB	R, W RAM	data that roll on the LCD display	bit 0 ... temperature bit 1 ... outside temp bit 2 ... current time bit 3 ... temp correction bit 4 ... humidity
fan start delay	41 MSB	R, W RAM	delay after valve open signal to fan start (if 0 – function off) For heating only.	[in seconds *10] 2 ... 20 seconds
show time	42 LSB	R, W RAM	time (in 100 ms) to display each value in show mode	see show mode
edit return time	42 MSB	R, W RAM	time (in s) of user inactivity to return from edit mode to show mode	
quick edit mode number	43 LSB	R, W RAM	number of mode which is editable through quick edit menu (short push of the knob)	0... function inactive 1... presence mode 2... fan mode
change over period	43 MSB	R, W RAM	time delay when changing from heating to cooling and back	in mins, 1 to 255
long push time	44 LSB	R, W RAM	time (in 100 ms) evaluated as long push (go to time schedule menu / leave menu); value must be less or equal than reg. 143 LSB/MSB	for editing of the time schedule and presence or fan mode
super long push time	44 MSB	R, W RAM	time (in 100 ms) evaluated as superlong push (go to settings menu)	RTC and temperature edit



allowed operation modes	45 LSB 45 MSB	R, W RAM	settings that user is able to perform 0 ... disabled 1 ... enabled	bit 0 ... temp corr. bit 1 ... day temp bit 2 ... night temp bit 3 ... 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 RAM	states in presence mode that user is able to switch between	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 RAM	states in fan mode that user is able to set	bit 0 ... auto (fan + A) bit 1 ... off (fan + M) bit 2 ... man 1 (fan + M + stage 1) bit 3 ... man 2 (fan + M + stage 1 and 2) bit 4 ... man 3 (all except A)
display symbols	48 LSB 48 MSB	R,W RAM	displayed symbols	bit 0 ... key bit 1 ... boiler bit 2 ... bell (alarm) bit 3 až 14 ... reserved
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	R, W RAM	Real time clock – BCD coding	See table at the end of this file, to write to those registers, write to EEPROM must be enabled in the status LSB register

	53 LSB 53 MSB		reserved	
program Monday num.1 time	54 LSB 54 MSB	R, W RAM	time schedule, Monday, time of event No. 1, in mins since 0:00 (midnight)	e.g. 121 ... 2h 1min
program Monday num.1 value	55 LSB 55 MSB	R, W RAM	time schedule, Monday, time of event No. 1, value change	0... day/comfort 1... night/standby 2... off/depression bit 15 = 1 ... event is disabled
program Monday num.2 time	56 LSB 56 MSB	R, W RAM	time schedule, Monday, time of event No. 2, in mins since 0:00 (midnight)	For description see address 55 - program Monday num. 1 value
program Monday num.2 value	57 LSB 57 MSB	R, W RAM	time schedule, Monday, time of event No. 2, value change	For description see address 55 - program Monday num. 1 value
program Monday num.3 time	58 LSB 58 MSB	R, W RAM	time schedule, Monday, time of event No. 3, in mins since 0:00 (midnight)	For description see address 55 - program Monday num. 1 value
program Monday num.3 value	59 LSB 59 MSB	R, W RAM	time schedule, Monday, time of event No. 3, value change	For description see address 55 - program Monday num. 1 value
program Monday num.4 time	60 LSB 60 MSB	R, W RAM	time schedule, Monday, time of event No. 4, in mins since 0:00 (midnight)	For description see address 55 - program Monday num. 1 value
program Monday num.4 value	61 LSB 61 MSB	R, W RAM	time schedule, Monday, time of event No. 4, value change	For description see address 55 - program Monday num. 1 value
program Monday num.5 time	62 LSB 62 MSB	R, W RAM	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight)	For description see address 55 - program Monday num. 1 value
program Monday num.5 value	63 LSB 63 MSB	R, W RAM	time schedule, Monday, time of event No. 5, value change	For description see address 55 - program Monday num. 1 value
rogram Monday num.6 time	64 LSB 64 MSB	R, W RAM	time schedule, Monday, time of event No. 6, in mins since 0:00 (midnight)	For description see address 55 - program Monday num. 1 value



program Monday num.6 value	65 LSB 65 MSB	R, W RAM	time schedule, Monday, time of event No. 6, in mins since 0:00, value change	For description see address 55 - program Monday num. 1 value
program Tuesday num.1 time	66 LSB 66 MSB	R, W RAM	time schedule, Tuesday, time of event No. 1, in mins since 0:00 (midnight)	e.g. 121... 2h 1min
...
program Sunday num.6 value	137 LSB 137 MSB	R, W RAM	time program, Sunday, change num. 6, value settings	For description see address 55 - program Monday num. 1 value
	138 LSB 138 MSB		reserved	
rh sensor corr	139 LSB 139 MSB	R,W RAM	relative humidity sensor correction v 0.01 %	signed 16bit register [in 0,01 %]
backlight config	140 LSB 140 MSB	R,W RAM	Configuration LCD and knob backlight function. If the bit0 is centrally disabled by 0, all backlight functions are turned off. If the bit3 is enabled (afterglow function) the first user action (press/turn button) switch on backlight and the second user action (press/turn button) is according defined user function.	bit 0 ... central enable of backlight functions (0 – off) bit 1 ... manual LCD backlight (1 – permanently switch on backlight on level LCD backlight intensity high , this function has higher priority than afterglow function, 0 – switch on backlight on level LCD backlight intensity low , afterglow function could change this level) bit 2 ... manual knob backlight (1 – permanently switch on backlight on level knob backlight intensity high , this function has higher priority than afterglow function, 0 – switch on backlight on level knob backlight intensity low , afterglow function could change this level)



				bit 3 ... enable afterglow (1 – first user activity, press or turn button, set backlight to high intensity (see registers LCD and knob backlight int. h.), after defined time from the last user activity (LCD and knob b. afterglow) set backlight back to low level; 0 – no response on user activity)
LCD backlight intensity high	141 LSB	R,W RAM	LCD backlight higher intensity	[0 .. 100 %]
LCD backlight intensity low	141 MSB	R,W RAM	LCD backlight lower intensity	[0 .. 100 %]
knob backlight intensity high	142 LSB	R,W RAM	knob backlight higher intensity	[0 .. 100 %]
knob backlight intensity low	142 MSB	R,W RAM	knob backlight lower intensity	[0 .. 100 %]
LCD backlight afterglow	143 LSB	R,W RAM	Time of LCD backlight after last user activity (turn/push knob) or after end of edit (return to scrolling mode), if value is 0 then no response on user activity, if non-zero value then it must be bigger than register 44 MSB.	[1 s]

knob backlight afterglow	143 MSB	R,W RAM	Time of knob backlight after last user activity (turn/push knob) or after end of edit (return to scrolling mode), if value is 0 then no response on user activity, if non-zero value then must be bigger than register 44 MSB.	[1 s]
	144 LSB 144 MSB		reserved	
	145 LSB 145 MSB 146 LSB 146 MSB		internal use - reserved	
uptime	1000 LSB 1000MSB 1001 LSB 1001MSB	R	uptime [s]	
	1002 LSB 1002MSB		reserved	
serial num	1003 LSB 1003MSB 1004 LSB 1004MSB	R, W OTP	Module serial number, writable only when manufactured (one time programmable, only if serial number is zero)	
extended settings	1005 LSB 1005MSB	R, W RAM	extended settings	bit 0 ... lights up all LCD symbols (factory test, if set on the knob can not be used for control)

Address	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Function	Range
49 LSB		10xseconds				seconds			seconds	00-59
49 MSB	0	10xminutes				minutes			minutes	00-59
50 LSB	0		10xhour	10xhour		hours			hours	00-23
50 MSB	0	0	0	0	0	day			day	01-07
51 LSB	0	0	10xdate			date			date	01-31
51 MSB	0	0	0	10xmonth		month			month	01-12
52 LSB		10xyear				year			year	00-99
52 MSB	0	0	0	0	0	0	0	0	unused	00

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