

R-FC017-11 Modbus – FCU controller for R-UC000-11, RTC, 5xDO, 2x DI, 2x RS485

R-FC017-51 Modbus – FCU controller for R-UC000-11, RTC, 5xDO, 2x DI, 2x RS485, 230VAC power

R-FC027-11 Modbus – FCU controller R-UC020-11, RTC, 2xDO, 3xAO (0..10V), 2x DI, 2x RS485

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

Supported Modbus functions:

- 01 Read Coils – read bits
- 02 Read Discrete Inputs – read bits
- 03 Read Holding Registers – read words
- 04 Read Input Registers – read words
- 15 Write Multiple Coils – write bits
- 16 Write Multiple Registers – write words

name	register	type	description	notes / (defaults)
module ID	1 LSB 1 MSB	R	module type identification	R-FC017-11 ... 0xF012 R-FC017-51 ... 0xF020 R-FC027-11 ... 0xF021
firmware	2 LSB 2 MSB	R	firmware version	
status LSB	3 LSB	RW	module status lower byte bit 0 – write to EEPROM enabled bit 1 – SW reset enabling 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	module status upper byte bit 0 0 normal mode,1 init mode bit 1 1 at the next EEPROM write attempt will all data be written to EEPROM 0 at the next EEPROM write attempt will received data be written to RAM only bit 2 – 1 – EEPROM initialized bit 3 – N/A bit 4 – 0 bit 5 – SW reset enabled bit 6 – 0 bit 7 – commissioning mode (1 – active)	SW reset enabled: see reg. 3 LSB bit 1, reg. 1002.

address	4 LSB	RWE	Modbus module address (for even distribution of load, fans and outputs are enabled after <i>address mod 10</i> secs)	!!! the change will be effective after restart only (however the register will be set immediately), 0x01
baud rate	4 MSB	RWE	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	RWE	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	RE	number of EEPROM writing cycles, does not overflow, cannot be reset by INIT nor by any other means	
relay	7 LSB	R	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	digital input status (DI1 ... presence, DI2 ... window / alarm contact) and heat/cool demands; DI1 and DI2 are influenced by the inputs settings register settings. If the FC0xx is a master (with multiple controllers with a single room unit), the slave DI states are included in this status. The master FC0xx controller must have inputs enabled (input settings , bits 0 and 1) to include slave DIs.	bit 0 ... input DI1 – presence (switch actual control mode to comfort) bit 1 ... input DI2 – window (switch actual control mode to off, higher priority than DI1) bit 2 ... heating demand (PID output HEAT > 5%) bit 3 ... cooling demand (PID output COOL > 5%)
PID output HEAT	8 LSB	R	controller heating output (output from regulation)	in %, range 0 .. 100%
PID output COOL	8 MSB	R	controller cooling output (output from regulation); incl. change-over C/O mode	in %, range 0 .. 100%

PID fan speed	9 LSB	R	fan speed state (output from regulation or value from manual control) ; PI regulation - fan speed depends on PI regulator, thresholds - upward 8-40-80% (hysteresis downwards) ON-OFF regulation - fan speed depends on difference of setpoint and actual temperature - upwards -> I.st. - 1/2 * hysteresis; II.st - 1.5 * hysteresis and 0.5K; III.st - 2.5 * hysteresis and 1K; (hysteresis downwards)	FC017: 0 ... off 1 ... Stage 1 2 ... Stage 2 3 ... Stage 3 FC027: 0..100%
UC comm. state	9 MSB	R	communication status of the room unit UC 010 (if comm fails for 60 secs, all controller outputs go to off (except for those controlled manually, see register manual control))	0 ... communication OK 1 ... timeout 2 ... MB exception 3 ... MB error
manual control	10 LSB	RW	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, manual heat digital output (FC027), manual cool digital output(FC027)); if set to 0, PID output values apply - digital outputs follows analog output values	bit 0 ... fan bit 1 ... heat output bit 2 ... cool output bit 3 ... heat DO1 (FC027 only) bit 4 ... cool DO2 (FC027 only) bit 5 ... C/O (1 = on)
manual fan speed	10 MSB	RW	manual fan speed setting (only if the corresponding bit in the manual control register is set)	R-FC017-x1: 0 ... off 1 ... Stage 1 2 ... Stage 2 3 ... Stage 3 R-FC027-11: AO3 - in %, range 0 .. 100%, last sequence - output transformation AOx min/max
manual heat output	11 LSB	RW	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	RW	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	RW	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	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	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	RWE	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	RWE	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	RWE	off mode heating temperature setpoint set by user (default = 12°C, 0x04B0)	recalculate: temperature = value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
set day/ comfort cooling temp	18 LSB 18 MSB	RWE	day/comfort mode cooling temperature setpoint set by user (default = 24°C, 0x0960)	recalculate: temperature = value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
set night/ pre-comfort cooling temp	19 LSB 19 MSB	RWE	night/standby mode cooling temperature setpoint set by user (default = 26°C, 0x0A28)	recalculate: temperature = value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
set depression/ economy cooling temp	20 LSB 20 MSB	RWE	off mode cooling temperature setpoint set by user (default = 35°C, 0x0DAC)	recalculate: temperature = value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex

actual temp	21 LSB 21 MSB	R	actual temperature measured by the internal sensor incl. correction (see corr temp)	recalculate: temperature = value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
actual outside temp	22 LSB 22 MSB	RW	actual outside temperature (for display purpose) or external regulation temperature (when bit 2 reg. 148 set)	recalculate: temperature = value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
set presence mode	23 LSB 23 MSB	RWE	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) <i>or</i> day (sun + occupied house) bit 1 ... standby (empty house) <i>or</i> night (moon + occupied house) bit 2 ... off (off) <i>or</i> depression (empty 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> bit 5 to 14 ... reserved bit 15 ... write enable (if set to 1 value will be written into register, if in 0 attempt will be ignored)
set fan mode	24 LSB 24 MSB	RWE	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	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	status of communication with slave FC0xx controllers (if multislave configuration)	0 ... OK 1 etc. ... first FC0xx address which has comm fail
regulator settings	26 LSB	RWE	controller configuration (defaults = hotel, relative, fan is on at heat and cool, 3 stage fan, valve protection on, DO1 NC type, 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 ... heating valve DO1 type (0 ... NC, 1 ... NO)
inputs	26 MSB	RWE	inputs configuration DI1 ... presence DI2 ... window / alarm contact (default = inputs enabled, normally open, i.e. active when contact on, 0x0F)	bit 0 ... DI1 enabled for operation mode control bit 1 ... DI2 enabled for operation mode control bit 2 ... DI1 sense (0– NC– normally closed, 1–NO– normally open) bit 3 ... DI2 sense (0– NC – normally closed, 1– NO– normally open)
P band	27 LSB 27 MSB	RWE	controller P-band (input deviation for output proportional part of 100 %) or hysteresis if On/Off (hysteresis for heating is under the setpoint, for cooling above the set-point) PI or OnOff setting see Reg. 29, bit 4	in 0.1K (2K, 0x0014)
I const	28 LSB 28 MSB	RWE	controller I – constant; if out of bounds, a new recalculated value is set after restart ; not used within ON/OFF regulation	in seconds; if set to 0, integration part is disabled (60 min, 0x0E10)

regulator settings 2	29 LSB	RWE	controller configuration (defaults = fan stage reset enable, slave off, DI2 as window contact, correction reset enable, PI control, 4-pipe, DO2 NC type, 0x89)	<p>bit 0 ... fan stages reset to Auto when scheduler changes the presence mode</p> <p>bit 1 ... enable FC Slave function (controller will not communicate with UC010) – change only applies after restart; priority to external temperature regulation</p> <p>bit 2 ... DI2 as alarm input, switches off all outputs</p> <p>bit 3 .. temp correction reset to 0 when presence mode changes</p> <p>bit 4 ... control mode (0 – PI, 1 – on/off), within FC027 - only change of AO/DO mirroring (PI/ON-OFF)</p> <p>bit 5 ... cooling valve DO2 type (0 ... NC, 1 ... NO)</p> <p>bit 6 ... logical/physical DI levels (0 - logical)</p> <p>bit 7 ... fancoil type: 0: 2-pipe, 1: 4-pipe.</p>
multi-slave number	29 MSB	RWE	amount of slave FC0xx (connected to the same bus as UC0xx, starting with Modbus address 10) – if this value is non-zero, the controller acts as a master (change is applied after device restart); from slave modules inputs are read and added to master inputs to control the controller mode (default = 0); if slave module has no communication from master module than switch off outputs	<p>0 ... multi-slave function is off</p> <p>1 or above ... number of FC0xx slave modules</p>
manual heat digital output (FC027 only)	30 LSB	RW	Manual value for heating DO1 (valid only when according bit set in reg. manual control); otherwise mirroring AO1; in manual configuration always PWM output – not influenced by reg. 29 LSB bit 4	In %, range 0 .. 100%

manual cool digital output	30 MSB	RW	Manual value for cooling DO2 (valid only when according bit set in reg. manual control); otherwise mirroring AO2; in manual configuration always PWM output – not influenced by reg. 29 LSB bit 4; if 2-pipe system, with this register is controlled DO2 in ON/OFF style (without NC/NO settings)	In %, range 0 .. 100%
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 caught. After reset, the whole register is set to 0.	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)
	31 MSB		reserved	
latched values	32 LSB	R	caught 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	RWE	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	RWE	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	RWE	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	RWE	maximum temperature which user can set as setpoint for day, night, and off modes -199.99 to 199.99 (default = 40°C, 0x0FA0)	recalculate: temperature = read value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex

corr temp	37 LSB 37 MSB	RWE	correction: adds to the actual temperature measured by the internal sensor -20.00 to 20.00 (default = -1,5 K, 0xFF6A)	recalculate: temperature = read value / 100 0 ... 0 199.99 ... 19999 -0.01 ... 0FFFFhex -199.99 ... 0B1E1hex
latch state	38 LSB	RWE	state which will be caught: 0 – it will be caught log. 0 1 – it will be caught log. 1 (caught log. 0, 0x00)	bit 0 is input 1 bit 1 is input 2
presence off delay	38 MSB	RWE	time delay after presence signal off (by DI1), default = 0	[0 ... 255 min]
step temp	39 LSB	RWE	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	RWE	time step for time schedule setting (default = 5 mins, 0x05)	in minutes
fan minimum (R-FC027 only)	40 LSB 40 MSB	RWE	minimal level of fan (will be set on 0 % output from z PI regulator), valid only with comfort presence state, for others states is minimal level 0 %	[0.1 %] [range 0.0 .. 100.0%]
show mode	41 LSB	RWE	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	RWE	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 (default = 0, disabled)
show time	42 LSB	RWE	time (in 100 ms) to display each value in show mode (default = 3 s, 0x1E)	see show mode
edit return time	42 MSB	RWE	time (in s) of user inactivity to return from edit mode to show mode (default = 30 s, 0x1E)	
quick edit mode number	43 LSB	RWE	number of mode which is editable through quick edit menu (short push of the knob) (default = fan mode, 0x02)	0 ... push function inactive 1 ... presence mode 2 ... fan mode
change-over period	43 MSB	RWE	time delay when switching between heating and cooling modes (default = 30 min, 0x1E)	in minutes, 1...255
long push time	44 LSB	RWE	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	RWE	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	RWE	settings that user is able to perform 0 ... disabled 1 ... enabled (default FC01x = temp corr, fan mode 0x0201)	bit 0 ... temp corr. bit 1 ... heating day temp bit 2 ... heating night temp bit 3 ... heating depression temp bit 4 ... cooling day temp bit 5 ... cooling night temp bit 6 ... cooling depression temp bit 7 ... RTC time bit 8 ... presence mode bit 9 ... fan mode bit 10 ... time programme
presence mode edit mask	46 LSB 46 MSB	RWE	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	RWE	fan states that user is able to switch between (default = all, 0x001F)	bit 0 ... Auto (fan + A) bit 1 ... Off (fan + M) bit 2 ... Man 1 (fan + M + Stage1) bit 3 ... Man 2 (fan + M + Stage1 and 2) bit 4 ... Man 3 (fan + M + Stage1, 2 and 3)
display symbols	48 LSB 48 MSB	RW	displayed symbols	bit 0 ... spanner bit 1 ... boiler bit 2 ... alarm bell bit 3 to 14 ... reserved bit 15 ... write enable (if set to 1 the value will be written into register, if in 0 attempt will be ignored)
RTC	49 LSB 49 MSB 50 LSB 50 MSB 51 LSB 51 MSB 52 LSB 52 MSB	RWE	Real time clock (not subject to INIT EEPROM command)	see table below; BCD coding; to write to those registers, write to EEPROM must be enabled in the status LSB register
			reserved	
program Monday Event 1 time	54 LSB 54 MSB	RWE	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	RWE	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	RWE	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	RWE	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	RWE	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	RWE	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	RWE	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	RWE	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	RWE	time schedule, Monday, time of event No. 5, in mins since 0:00 (midnight) (default = 06:00 h, 0x0168)	e.g. 121 ... 2h 1min
program Monday Event 5 value	63 LSB 63 MSB	RWE	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	RWE	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	RWE	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	RWE	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	RWE	time schedule, Sunday, event No. 6, value (default = disabled)	0 ... day/comfort 1 ... night/standby 2 ... off/depression bit 15 = 1 ... event is disabled
	138 LSB 138 MSB	R	reserved	
	139 LSB 139 MSB	R	reserved	
Actual rh	140 LSB 140 MSB	R	Actual measured relative humidity with incl. sensor correction (see rh sensor corr)	Signed 16bit register [0,01 %]
	141 LSB 141 MSB	R	reserved	
Rh sensor corr	142 LSB 142 MSB	RWE	Relative humidity sensor correction	Signed 16bit register [0,01 %]
Backlight config	143 LSB 143 MSB	RWE	configuration of LCD and knob backlight function. If the bit 0 is centrally disabled by 0, all backlight functions are turned off. If the bit 3 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). (0x0009)

LCD backlight intensity high	144 LSB	RWE	LCD backlight intensity – higher intensity	[0 ... 100 %] (100 %)
LCD backlight intensity low	144 MSB	RWE	LCD backlight intensity – lower intensity	[0 ... 100 %] (0 %)
knob backlight intensity high	145 LSB	RWE	knob backlight intensity – higher intensity	[0 ... 100 %] (100 %)
knob backlight intensity low	145 MSB	RWE	knob backlight intensity – lower intensity	[0 ... 100 %] (0 %)
LCD backlight afterglow	146 LSB	RWE	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 long push time	[1 sec] (3 secs)
Knob backlight afterglow	146 MSB	EWR	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 long push time	[1 sec] (3 secs)
UC FW version	147 LSB 147 MSB	R	FW version read from UC module	
regulator settings 3	148 LSB 148 MSB	RWE	regulator configuration 3; split output AO1/AO2 (Split AO) - zone limits in reg. heat/cool 0/100 percent , def. values: heating 100-0% = 0.5 - 4.5V, cooling 0-100% = 5.5 - 9.5V; this function has greater priority than C/O; right sequence of heat/cool and 0/100% must be used (100% on margin of range and 0% inside range, e.g. heat 100, heat 0, cool 0, cool 100 - see default values); if not active cooling neither heating - output is in middle of range between heat 0 a cool 0; configuration is not transfered into slave module; if Split AO function is used, the same configuration in master and slave module must be used. If Split AO function is used output transformation is not taken - reg. 155-157.	bit 0 ... split output AO1 bit 1 ... split output AO2 bit 2 ... external regulation temperature (reg. 22, no communication with UC module)
AO1 heat 100 percent	149 LSB	RWE	borders for Split AO	[0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (0.5V, 5)

AO1 heat 0 percent	149 MSB	RWE	borders for Split AO	[0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (4.5V, 45)
AO1 cool 0 percent	150 LSB	RWE	borders for Split AO	[0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (5.5V, 55)
AO1 cool 100 percent	150 MSB	RWE	borders for Split AO	[0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (9.5V, 95)
AO2 heat 100 percent	151 LSB	RWE	borders for Split AO	[0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (0.5V, 5)
AO2 heat 0 percent	151 MSB	RWE	borders for Split AO	[0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (4.5V, 45)
AO2 cool 0 percent	152 LSB	RWE	borders for Split AO	[0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (5.5V, 55)
AO2 cool 100 percent	152 MSB	RWE	borders for Split AO	[0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (9.5V, 95)
AO1 output	153 LSB	R	AO1 actual value	range 0 .. 100%, equals output of 0..10V
AO2 output	153 MSB	R	AO2 actual value	range 0 .. 100%, equals output of 0..10V
AO3 output	154 LSB	R	AO3 actual value	range 0 .. 100%, equals output of 0..10V
	154 MSB	R	reserved	
AO1 min	155 LSB	RWE	minimal value of AO1, output transformation, last sequence, if Split AO function is active (reg. 148 bit 0), transformation is not calculated	[step 0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (0V)
AO1 max	155 MSB	RWE	maximal value of AO1, output transformation, last sequence, if Split AO function is active (reg. 148 bit 0), transformation is not calculated	[step 0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (10V)
AO2 min	156 LSB	RWE	minimal value of AO2, output transformation, last sequence, if Split AO function is active (reg. 148 bit 1), transformation is not calculated	[step 0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (0V)
AO2 max	156 MSB	RWE	maximal value of AO1, output transformation, last sequence, if Split AO function is active (reg. 148 bit 1), transformation is not calculated	[step 0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (10V)
AO3 min	157 LSB	RWE	minimal value of AO3, output transformation, last sequence	[step 0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (0V)

AO3 max	157 MSB	RWE	maximal value of AO3, output transformation, last sequence	[step 0.1 V, range 0.0V .. 10.0V, i.e. 0 .. 100] (10V)
regulator settings 4	158	RWE	konfigurace regulátoru 4	bit 0 ... polarity of AO1 (0 – NC, 1 – NO) bit 1 ... polarity of AO2 (0 – NC, 1 – NO) (0)
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	reset device	The device resets if reset is enabled (see reg. 3), and a non-zero value is written to this register.

Adresa	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0	Funkce	Rozsah
LSB		10xsekundy				sekundy			sekundy	00-59
MSB	0	10xminuty				minuty			minuty	00-59
LSB	0		10xhodina	10xhodina		hodiny			hodiny	00-23
MSB	0	0	0	0	0	den			den	01-07
LSB	0	0	10xdatum			datum			datum	01-31
MSB	0	0	0	10xměsíc		měsíc			měsíc	01-12
LSB	10xrok					rok			rok	00-99
MSB	0	0	0	0	0	0	0	0	nevyužito	00