

# Wavin Sentio Modbus manual

## 8.10 . Wavin Sentio Modbus manual

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### Requirements

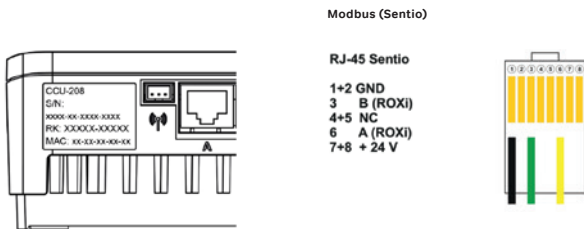
This manual covers the Modbus specification for Sentio control units with firmware version TM60006.0 or higher.  
For the Modbus TCP/IP function the control unit needs to be firmware version TM60014 or higher.

### Bus parameters

Parameter	Values	
Transmission mode	<b>RTU</b>	<b>TCP</b>
Supported baud rates	9600,19200(default),38400, 57600 bps	-
Default address	1(default) - 247	IP ADDRESS:502 (unit ID 255 (0xFF) if needed)
Data bits	8	-
Parity	None, odd, even	-
Stop bit	0, 1, 2	-
Possible modes	Disabled (Default), Read only, Read/write, write with password, Master	Disabled (Default), Read only, Read/write, write with password
Physical interface	RS-485 on port A	RJ-45 on LAN port
Reply time limit	Timeout = 500 mS	Timeout = 500 mS
Max reading volume at once:	Max 32 pcs register or 256 bits	Max 32 pcs register or 256 bits

## Modbus RTU connection on Sention control unit

The Modbus RTU shall be connected to the most left RJ-45 connector at the bottom of the Sention Control unit. The RJ-45 connector is marked with an "A". This is the only port able to do Modbus RTU.



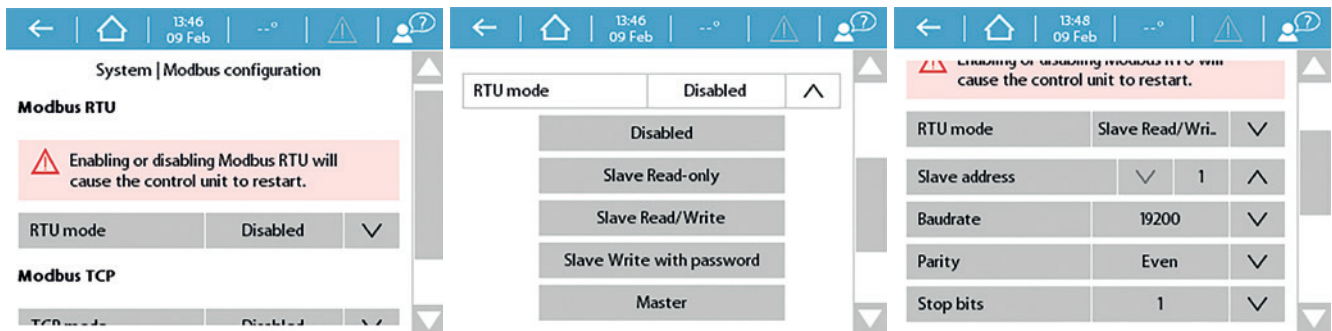
## RJ-45 pin layout in Wavin Sention control unit

Pin no.	
1	GND
2	GND
3	B
4	Not connected
5	Not connected
6	A
7	+ 24 V
8	+ 24 V

## Activating and setup of the Modbus RTU

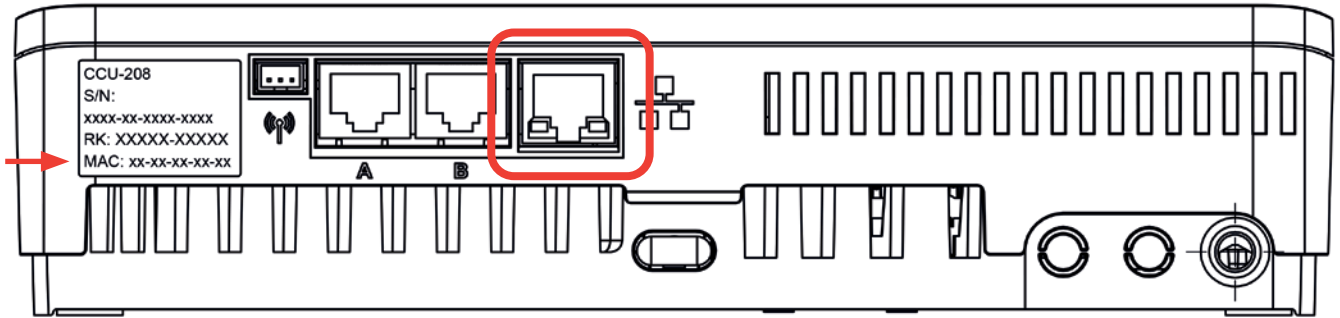
By default is the Modbus RTU connection deactivated. It is only possible to activate the Modbus RTU RJ-45 port A by using a Sention Display. To activate the Modbus, go to [System | Installer settings | Modbus configuration | Modbus RTU](#) and select the desired mode. After selection of Modbus mode, the Sention control unit is restarted.

Remark: After activating the Modbus mode it not possible to use the RJ-45 A connector for the Sention display.



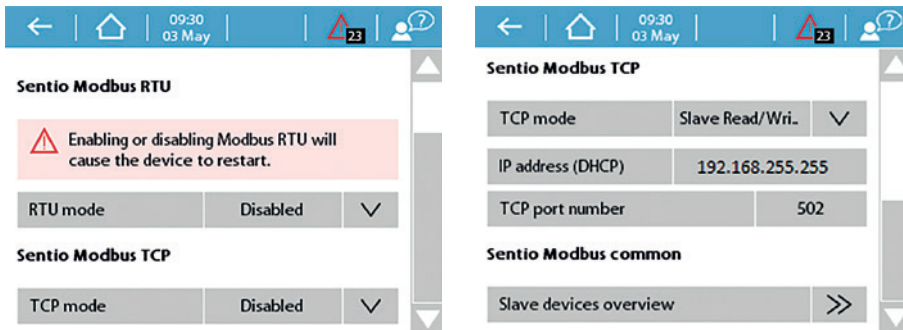
### Connection to Sentio Modbus TCP/IP

For Modbus TCP/IP an ethernet connection will be made using the RJ-45 LAN port .



### Activation and setup of Modbus TCP/IP

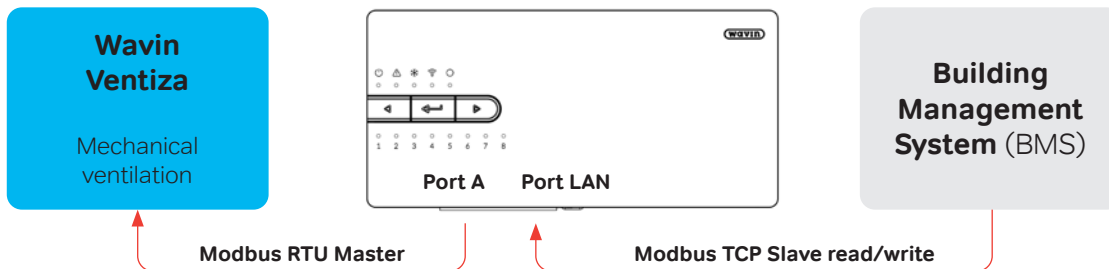
Activate the Modbus TCP/IP via the Sentio display by going to [System | Installer Settings | Modbus settings - Modbus TCP](#). After selecting the TCP mode, the function is activated.



The Sentio device uses a dynamic IP address obtained via an DHCP request. If the IP address requires to be static for the network this can be achieved by configuring the applicable switch or router to serve a static IP address based on MAC address or hostname. The MAC address can be obtained via the sticker on the unit, the hostname used by the Sentio system is:

DHCP: Wavin Sentio CCU#[last four S/N digits]

When using Modbus RTU master to connect to an external device (e.g. Ventiza mechanical ventilation) it is still possible to use the Modbus TCP/IP slave function to connect to a building management system.



## Modbus values

### List of values

The complete list of values is described appendix 1 in this manual.

### Versioning

The list of Modbus values is not finite. As new features are implemented, new values are added. If you want to know exactly which values are offered by your system:

- a. Read following Modbus registers or check the 'system information' in the touch screen.

Modbus adress	Value name	Description
00001	Adress space major version	Incremented on incompatible change E.g. when changing format or removing values
00002	Adress space minor version	Incremented on compatible change E.g. when adding new values

- b. Find the FW-version at the right side of the 2. row in Appendix 1.
- c. The values marked as Yes in this column are supported by your system. If a value is needed that is not supported by the current version, please update the central control unit or contact Wavin support.

## Modbus registers

The Modbus offers several types of registers. Following types are supported by Sentio.

Area name	Access width	Access type	Usage
Discrete inputs	1-bit	Read only	Read system alarms and warnings
Input registers	16-bit registers	Read only	Read state values
Holding registers	16-bit registers	Read / Write	Read/write configuration

## Modbus commands

The registers described in the previous chapter can be accessed using following commands.

See Modbus specification for packet format - [http://modbus.org/docs/Modbus\\_Application\\_Protocol\\_V1\\_1b3.pdf](http://modbus.org/docs/Modbus_Application_Protocol_V1_1b3.pdf)

Code	Command	Area
0x02	Read discrete inputs	Discrete inputs
0x03	Read holding registers	Holding registers
0x04	Read input registers	Input registers
0x06	Write single register	Holding register
0x10	Write multiple registers	Holding registers

## Error handling and return codes

### Modbus error codes

Exception code	Command	Area
01	Illegal function	Returned when unknown command is used. See Modbus Commands for list of supported commands.
02	Illegal data address	Returned when reading or writing to register, which does not exist. <b>NOTE:</b> This is also the case when multiple registers are accessed in a function and one or more registers don't exist and some registers might exist.
03	Illegal data value	Returned when writing register by a value, which is not supported. See appendix 1 for list of supported values.
04	Slave device failure	Returned when reading of writing register, which contains values from a peripheral, which is disconnected - e.g. the Calefa controller.
06	Server device busy	Returned during device start-up, or when data integrity cannot be guaranteed.

### Device booting

Device returns exception code SERVER DEVICE BUSY (06) during start-up, because data integrity cannot be guaranteed during start-up. Please wait for the system to finish its start-up.

### Invalid value

If a measured value is not initialized -e.g. due to failure or long response time from wireless peripherals -then INVALID\_VALUE is returned as a response to read command.

### Data validation

When a configuration data is set, then it is validated and can be modified by system to meet the system requirements or it can be rejected.

- ⦿ If value is lower than minimum, then it is set to minimum
- ⦿ If value is higher than maximum, then it is set to maximum
- ⦿ If value is not aligned to step, it is aligned (e.g. temperature 15.2 is aligned to 15.0)
- ⦿ If a string value (val\_utf8) is longer than the device can store, the string is shortened

### Data types

All Modbus registers consist of 16 bits of data. The meaning of this data can be different and multiple registers can be combined to hold more data. Following data types are supported:

Type	Length	Range	Invalid value
val_enum	1B	0..255	0xFF
val_u	1B	0..255	0xFF
val_u2	2B	0..65535	0xFFFF
val_u4	4B	0..4294967295	0xFFFFFFFF
val_utf8	2b LEN + UTF8	Utf8. max 256B	LEN= 0xFFFF, no data
val_d2_fp100	2B	Fixed-point (-327,68..327,67)	0x7FFF

### Reading and writing text values (datatype val\_utf8)

val\_utf8 is composed by multiple 16 bits holding registers, but the data itself is an array of bytes. When for instance the string "Hello" is stored in the array the first byte is placed first in the packet etc. This results in a read response of:

### Command

Command code	Byte count	Reg X Hi	Reg X Lo	Reg X+1 Hi	Reg X+1 Lo	Reg X+2 Hi	Reg X+2 Lo	Reg X+3 Hi	Reg X+3 Lo
0x03	0x08	"H"	"e"	"l"	"l"	"o"	"0x00"	"0x00"	"0x00"

It is also possible to store UTF-8 strings – e.g. "Blå Værelse". In this case, the national characters are encoded into multiple bytes. We see that 13 bytes will be needed to save the entire text.

Character	Value
B	0x42
l	0x6c
å	0xc3
	0xa5
v	0x56
æ	0xc3
	0xa6
r	0x72
e	0x65
l	0x6c
s	0x73
e	0x65

## Appendix

Object	Parameter	R/W	Modbus Table	Modbus Address	Data type	Description	Address space version			
							3.0 FW 8	3.1 FW 10	3.2 FW 12	3.3 FW 14
<b>LOCATION</b>										
Location				000xx						
	Aggregated warning	R	Discrete Inputs	00001		A problem is pending in whole system (Location)	YES	YES	YES	YES
	Aggregated error	R	Discrete Inputs	00002		A critical problem is pending in whole system (Location)	YES	YES	YES	YES
	Address space major version	R	Input Register	00001	val_u1	= 3 (Incremented on incompatible change)	CHANGED		YES	YES
	Address space minor version	R	Input Register	00002	val_u1	= 1 (Incremented on compatible change)	YES	CHANGED	YES	YES
	Dev type	R	Input Register	00010	val_u1	1 - CCU-208 2 - DHW-201 (Calefa)	YES	YES	YES	YES
	Dev hw version	R	Input Register	00011	val_u1		YES	YES	YES	YES
	Dev sw version	R	Input Register	00012	val_u1		YES	YES	YES	YES
	Dev sw version minor	R	Input Register	00013	val_u1		YES	YES	YES	YES
	Dev serial number prefix	R	Input Register	00014	val_u2	= 1530	YES	YES	YES	YES
	Dev serial number	R	Input Register	00015-00016	val_u4		YES	YES	YES	YES
	Heating/Cooling mode	R	Input Register	00020	val_u1	0 - HEATING 1 - COOLING	-	YES	YES	YES
	Address space major version	R/W	Holding register	00001	val_u1	= 3 (Incremented on incompatible change)	CHANGED	YES	YES	YES
	Address space minor version	R/W	Holding register	00002	val_u1	= 1 (Incremented on compatible change)	YES	CHANGED	YES	YES
	Modbus slave address	R/W	Holding register	00003	val_u1	Allowed values: 1 to 247 Default: 1	YES	YES	YES	YES
	Modbus baudrate	R/W	Holding register	00004	val_u2	Allowed values: 9600, 19200, 38400, 57600 Default: 19200	YES	YES	YES	YES
	Modbus mode	R/W	Holding register	00005	val_u1	0 DISABLED 1 READ_ONLY 2 READ_WRITE 3 WRITE_WITH_PASSWORD Default: 0	EXTENDED	YES	YES	YES
	Modbus password	W	Holding register	00006	val_u2	When Modbus mode = WRITE_WITH_PASSWORD, the write commands are disabled until this register is written by a valid password. Once the password is written, the write commands are accepted for next 11 minutes. Then the password has to be set again.  Two steps are required for password change: 1. Write the old password 2. Write the new password before 11 minutes elapses.  Default password: 1234, Write only, range for passwd is 1 - 65535	YES	YES	YES	YES
	Modbus parity	R/W	Holding register	00007	val_u1	0 - NONE 1 - ODD 2 - EVEN	-	YES	YES	YES
	Modbus stop bits	R/W	Holding register	00008	val_u1	0 - 1 STOP BIT 1 - 2 STOP BITS	-	YES	YES	YES
	Location name	R/W	Holding register	00010-00025	val_ut8	Placeholder for 32 bytes of location description. See "working with strings" chapter for more info.	YES	YES	YES	YES
	Standby	R/W	Holding register	00026	val_u1	0 OFF 1 ON	YES	YES	YES	YES
	Vacation	R/W	Holding register	00027	val_u1	0 OFF 1 ON	YES	YES	YES	YES
	Datetime	R/W	Holding register	00028-00029	val_u4	Current time - unit timestamp format - localtime including DST (if enabled)	YES	YES	YES	YES
	Daylight saving time allowed	R/W	Holding register	00030	val_u1	0 Disabled 1 Enabled	YES	YES	YES	YES
	Cooling minimum outdoor temperature	R/W	Holding register	00031	val_d2_fp100	Cooling is blocked, when outdoor temperature is lower than this value.	YES	YES	YES	YES
	Heating maximum outdoor temperature	R/W	Holding register	00032	val_d2_fp100	Heating is blocked, when outdoor temperature is higher than this value.	YES	YES	YES	YES
	Update mode	R/W	Holding register	00033	val_u1	0 Dont allow from mobile app 1 Enabled 2 Disabled entirely	-	YES	YES	YES
	Heating/Cooling mode BMS override	R/W	Holding register	00034	val_u1	Note: Only available in hardware profiles, which support manual H/C change-over. In other profiles override is set to DISABLED.  0 - DISABLED 1 - HEATING MODE 2 - COOLING MODE 3 - H/C MODE SET BY EXTERNAL SWITCH (only when HW input is available)	-	-	YES	YES
	Timezone number	R/W	Holding register	00035	val_u2	For list of supported timezones see tab "Timezone list"	-	-	YES	YES
<b>ROOMS (INDOOR ZONES)</b>										
<b>Room 1</b>										
ROOM TYPE				001xx		Note: Dummy room is special type of room, where no thermostat or sensor is installed. Dummy room does not support cooling mode. To find out room type, check input register 127.				
NORMAL_DUMMY	Aggregated warning	R	Discrete Inputs	00101		A problem is pending in Room	YES	YES	YES	YES
NORMAL_DUMMY	Aggregated error	R	Discrete Inputs	00102		A critical problem is pending in Room	YES	YES	YES	YES
NORMAL	Warning - low battery	R	Discrete Inputs	00103		There are one or more peripherals in the room with low battery.	YES	YES	YES	YES
NORMAL	Error - peripheral lost	R	Discrete Inputs	00104		There are one or more peripherals in the room which are not responding.	YES	YES	YES	YES
NORMAL_DUMMY	Desired temp	R	Input Register	00101	val_d2_fp100	Shows the desired temperature in the room.	YES	YES	YES	YES
NORMAL_DUMMY	General Heating/Cooling state (radiator   underfloor   integration)	R	Input Register	00102	val_u1	1 IDLE 2 HEATING 3 COOLING 4 BLOCKED_HEATING 5 BLOCKED_COOLING	EXTENDED	YES	YES	YES
NORMAL_DUMMY	General Heating/Cooling blocking source (radiator   underfloor   integration)	R	Input Register	00103	val_u1	Please check top of the document - GENERAL BLOCKING SOURCES	EXTENDED	YES	YES	YES
NORMAL	Air temperature	R	Input Register	00104	val_d2_fp100	Current air temperature measured in the room.	YES	YES	YES	YES
NORMAL	Floor temperature	R	Input Register	00105	val_d2_fp100	Current floor temperature measured in the room.	YES	YES	YES	YES
NORMAL	Relative humidity	R	Input Register	00106	val_d2_fp100	Current humidity measured in the room.	YES	YES	YES	YES
NORMAL	Calculated dew point	R	Input Register	00107	val_d2_fp100	Current calculated dewpoint	YES	YES	YES	YES
NORMAL	Associated to Radiators	R	Input Register	00111	val_u1	0 - NONE 73 .. ITC1 (Address of modbus object) 74 .. ITC2 (Address of modbus object) 77 .. HCC1 (Address of modbus object) 78 .. HCC2 (Address of modbus object) 79 .. HCC3 (Address of modbus object) 81 .. H/C Source (Address of modbus object)	YES	CHANGED	YES	YES
NORMAL	Associated to UFHC	R	Input Register	00112	val_u1	0 - NONE 73 .. ITC1 (Address of modbus object) 74 .. ITC2 (Address of modbus object) 77 .. HCC1 (Address of modbus object) 78 .. HCC2 (Address of modbus object) 79 .. HCC3 (Address of modbus object)	YES	CHANGED	YES	YES
NORMAL	Associated to Drying (humidity control)	R	Input Register	00114	val_u1	0 - NONE 650 .. AHU 1 (Address of modbus object) 651 .. AHU 2 (Address of modbus object) 652 .. AHU 3 (Address of modbus object) 653 .. AHU 4 (Address of modbus object)	-	YES	YES	YES
NORMAL	Associated to Thermal integration (thermal. integ control)	R	Input Register	00115	val_u1	0 - NONE 650 .. AHU 1 (Address of modbus object) 651 .. AHU 2 (Address of modbus object) 652 .. AHU 3 (Address of modbus object) 653 .. AHU 4 (Address of modbus object)	-	YES	YES	YES
NORMAL	Associated to Ventilation (air quality control)	R	Input Register	00116	val_u1	0 - NONE 610 .. Ventilation 1 (Address of modbus object) 611 .. Ventilation 2 (Address of modbus object)	-	-	-	YES

NORMAL	Radiators state (air temperature)	R	Input Register	00117	val_u1	0 NONE (not used in this room or load was not detected on at least one output) 1 IDLE 2 HEATING 3 COOLING 4 BLOCKED_HEATING 5 BLOCKED_COOLING	-	YES	YES	YES
NORMAL	Underfloor Heating/Cooling state (floor temperature)	R	Input Register	00118	val_u1	0 NONE (not used in this room or load was not detected on at least one output) 1 IDLE 2 HEATING 3 COOLING 4 BLOCKED_HEATING 5 BLOCKED_COOLING	-	YES	YES	YES
NORMAL	Drying state (relative humidity)	R	Input Register	00119	val_u1	0 NONE (not used in this room) 1 IDLE 2 DRYING 3 BLOCKED_DRYING	-	YES	YES	YES
NORMAL	Thermal integration state (air temperature)	R	Input Register	00120	val_u1	0 NONE (not used in this room) 1 IDLE 2 HEATING 3 COOLING 4 BLOCKED_HEATING 5 BLOCKED_COOLING	-	YES	YES	YES
NORMAL	Ventilation state	R	Input Register	00121	val_u1	0 NONE (not used in this room) 1 STOPPED 2 UNOCCUPIED 3 ECONOMY 4 COMFORT 5 BOOST 6 BLOCKED	-	-	-	YES
NORMAL	Blocking source - Radiators	R	Input Register	00122	val_u1	Same as Heating/Cooling blocking source	-	YES	YES	YES
NORMAL	Blocking source - Underfloor Heating/Cooling	R	Input Register	00123	val_u1	Same as Heating/Cooling blocking source	-	YES	YES	YES
NORMAL	Blocking source - Drying	R	Input Register	00124	val_u1	Same as Heating/Cooling blocking source	-	YES	YES	YES
NORMAL	Blocking source - Integration	R	Input Register	00125	val_u1	Same as Heating/Cooling blocking source	-	YES	YES	YES
NORMAL	Blocking source - Ventilation	R	Input Register	00126	val_u1	Same as Heating/Cooling blocking source	-	-	-	YES
NORMAL, DUMMY	Room type	R	Input Register	00127	val_u1	0 - NORMAL (DEFAULT) 1 - DUMMY (no thermostat or sensor installed)	-	-	-	YES
DUMMY	Associated Heating Source	R	Input Register	00128	val_u1	0 .. NONE 73 .. ITC1 (Address of modbus object) 74 .. ITC2 (Address of modbus object) 77 .. HCC1 (Address of modbus object) 78 .. HCC2 (Address of modbus object) 79 .. HCC3 (Address of modbus object) 81 .. H/C Source (Address of modbus object)	-	-	YES	YES
NORMAL, DUMMY	Room name	R/W	Holding register	00101-00116	val_utf8	String description (32 Bytes, UTF8, NULL terminated)	YES	YES	YES	YES
NORMAL, DUMMY	Room mode	R/W	Holding register	00117	val_u1	0 SCHEDULE 1 MANUAL  In SCHEDULE mode, the "Room temperature setpoint" is not used and the room temperature is controlled by scheduler.	YES	YES	YES	YES
NORMAL, DUMMY	Room mode override	R/W	Holding register	00118	val_u1	0 NONE 1 TEMPORARY 2 VACATION_AWAY 3 ADJUST  In override mode (> NONE), the "Room temperature setpoint" is not used. The requested temperature is corrected by user via room thermostat or mobile application. You can disable the override mode by setting this value to 0 (NONE)	YES	YES	YES	YES
NORMAL	Room temperature setpoint	R/W	Holding register	00119	val_d2_fp100	Temperature requested by user. This value is not used when - Room mode = SCHEDULE (Scheduler temperature is used) - Location.Vacation = ON (Vacation temperature is used) - Location.Standby = ON (Standby temperature is used) - Temporary mode is activated (User defined temperature is used)	YES	YES	YES	YES
NORMAL	User Interface access level (thermostat lock)	R/W	Holding Register	00120	val_u1	8 LOCKED (Read Only) 16 HOTEL 32 UNLOCKED	YES	YES	YES	YES
NORMAL, DUMMY	Standby temperature	R/W	Holding Register	00121	val_d2_fp100	Room temperature setpoint used when the system is in Standby mode	YES	YES	YES	YES
NORMAL, DUMMY	Vacation temperature	R/W	Holding Register	00122	val_d2_fp100	Room temperature setpoint used when the system is in Vacation mode	YES	YES	YES	YES
NORMAL, DUMMY	Exclude from vacation	R/W	Holding Register	00123	val_u1	Do not allow the Vacation mode in this room	YES	YES	YES	YES
NORMAL	Adaptive mode	R/W	Holding Register	00124	val_u1	Allow adaptive mode	YES	YES	YES	YES
NORMAL	Thermal integration heating offset	R/W	Holding Register	00125	val_d2_fp100	Thermal integration heating offset	-	YES	YES	YES
NORMAL	Thermal integration hysteresis	R/W	Holding Register	00126	val_d2_fp100	Thermal integration hysteresis	-	YES	YES	YES
NORMAL	Humidity threshold heating	R/W	Holding Register	00127	val_d2_fp100	Humidity threshold heating	-	YES	YES	YES
NORMAL	Humidity threshold cooling	R/W	Holding Register	00128	val_d2_fp100	Humidity threshold cooling	-	YES	YES	YES
NORMAL	Humidity hysteresis	R/W	Holding Register	00129	val_d2_fp100	Humidity hysteresis	-	YES	YES	YES
NORMAL	Drying - cooling water offset	R/W	Holding Register	00130	val_d2_fp100	Drying - cooling water offset	-	YES	YES	YES
NORMAL	Drying - cooling water offset hysteresis	R/W	Holding Register	00131	val_d2_fp100	Drying - cooling water offset hysteresis	-	YES	YES	YES
NORMAL	Dew point cooling threshold	R/W	Holding Register	00132	val_d2_fp100	Dew point threshold temp when cooling	-	YES	YES	YES
NORMAL	Dew point cooling threshold hysteresis	R/W	Holding Register	00133	val_d2_fp100	Dew point threshold temp hysteresis when cooling	-	YES	YES	YES
NORMAL	Humidity high alarm limit	R/W	Holding Register	00134	val_d2_fp100	Humidity high alarm limit	-	YES	YES	YES
DUMMY	Room temperature preset	R/W	Holding register	00135	val_u1	0 - ECO 1 - COMFORT 2 - EXTRA COMFORT  Temperature preset requested by user. This value is not used when - Room mode = SCHEDULE (Scheduler temperature is used) - Location.Vacation = ON (Vacation temperature is used) - Location.Standby = ON (Standby temperature is used) - Temporary mode is activated (User defined temperature is used)	-	-	YES	YES
Room 2	Same as Room 1			002xx						
Room 3	Same as Room 1			003xx						
...				...						
Room 24	Same as Room 1			024xx						
<b>OUTDOOR ZONES</b>										
<b>Outdoor 1</b>										
	Aggregated warning	R	Discrete Inputs	03301		A problem is pending in Outdoor zone	YES	YES	YES	YES
	Aggregated error	R	Discrete Inputs	03302		A critical problem is pending in Outdoor zone	YES	YES	YES	YES
	Warning - low battery	R	Discrete Inputs	03303		There are one or more peripherals in the Outdoor zone with low battery.	YES	YES	YES	YES
	Error - peripheral lost	R	Discrete Inputs	03304		There are one or more peripherals in the Outdoor zone which are not responding.	YES	YES	YES	YES
	Air Temp	R	Input Register	03301	val_d2_fp100	Used for Frost protection, Cooling blocking, H/C mode switching	YES	YES	YES	YES
	Air Temp Filtered	R	Input Register	03302	val_d2_fp100	Used in Heat curve calculations, H/C blocking (to be changed)	YES	YES	YES	YES
	Air Temp Geometrical	R	Input Register	03303	val_d2_fp100	Not yet used in the code (pending issue)	YES	YES	YES	YES
	Name	R/W	Holding Register	03301-03316	val_utf8	String description (32 Bytes, UTF8, NULL terminated)	YES	YES	YES	YES
	Air Temp BMS Override	R/W	Holding Register	3317	val_d2_fp100	Enables to put artificial external temperature used for ITC1 INVALID ... it will not be used	YES	YES	YES	YES



DHW CONTROLLERS									
DHW Calefa									
Aggregated warning	R	Discrete Inputs	065xx						
Aggregated error	R	Discrete Inputs	06501		A problem is pending in DHW	YES	YES	YES	YES
Warning - Retentive Low Energy	R	Discrete Inputs	06503		A critical problem is pending in DHW	YES	YES	YES	YES
Error - DHW temp high	R	Discrete Inputs	06504			YES	YES	YES	YES
Error - Motor failure	R	Discrete Inputs	06505			YES	YES	YES	YES
Error - DHI sensor failure (source inlet)	R	Discrete Inputs	06506			YES	YES	YES	YES
Error - DHO sensor failure (source return)	R	Discrete Inputs	06507			YES	YES	YES	YES
Error - DHW sensor failure	R	Discrete Inputs	06508			YES	YES	YES	YES
Error - DCW sensor failure	R	Discrete Inputs	06509			YES	YES	YES	YES
Warning - Pressure high	R	Discrete Inputs	06510			YES	YES	YES	YES
Warning - Pressure low	R	Discrete Inputs	06511			YES	YES	YES	YES
Error - Pressure critical low	R	Discrete Inputs	06512			YES	YES	YES	YES
Desired DHW temp	R	Input Register	06501	val_d2_fp100	Shows the desired temperature of the domestic hot water.	YES	YES	YES	YES
State	R	Input Register	06502	val_u1	1 IDLE 2 HEATING (hot water is consumed by user) 3 BYPASS (keeping heat exchanger hot for circulation) 4 BLOCKED_HEATING 5 BLOCKED_BYPASS  Shows, whether the system wants to heat or to have bypass activated.	CHANGED	YES	YES	YES
Blocking source	R	Input Register	06503	val_u1	Same as Heating/Cooling blocking source	YES	YES	YES	YES
Circulation state	R	Input Register	06504	val_u1	0 NONE (disabled) 1 IDLE 2 ON	CHANGED	YES	YES	YES
Measured DHW temp	R	Input Register	06505	val_d2_fp100	Current temperature of the domestic hot water flowing from DHW	YES	YES	YES	YES
Source - Inlet temp	R	Input Register	06506	val_d2_fp100	Current temperature of the water incoming from the heat source.	YES	YES	YES	YES
Source - Return temp	R	Input Register	06507	val_d2_fp100	Current temperature of the water returning to the heat source.	YES	YES	YES	YES
Pressure	R	Input Register	06508	val_d2_fp100	Current pressure of the secondary system	YES	YES	YES	YES
Name	R/W	Holding Register	06501 - 06516	val_utf8	String description (32 Bytes, UTF8, NULL terminated)	YES	YES	YES	YES
Mode	R/W	Holding Register	06517	val_u1	0 SCHEDULE 1 SCHEDULE_ADAPTIVE 2 ECO 3 COMFORT  Eco = circulation and hot bypass are disabled Comfort = circulation and hot bypass are enabled	YES	YES	YES	YES
User interface access level (calefa display lock)	R/W	Holding Register	06518	val_u1	<40 USER (user menu) >=40 INSTALLER (inst. menu)	YES	YES	YES	YES
Block request	R/W	Holding Register	06519	val_u1	0 NONE 1 BLOCK_REQUEST  When BLOCK_REQUEST is set, then the system blocks heating and bypass to eliminate consumption from heat supplier.	YES	YES	YES	YES
Power consumption limit	R/W	Holding Register	06520	val_u2		YES	YES	YES	YES
DHW temp set	R/W	Holding Register	06521	val_d2_fp100	Requested temperature of domestic hot water.	YES	YES	YES	YES
DHW bypass temp	R/W	Holding Register	06522	val_d2_fp100		YES	YES	YES	YES
Circulation - Pump present	R/W	Holding Register	06523	val_u1	0 DISABLED 1 ENABLED (scheduler)	YES	YES	YES	YES
Circulation - Inlet temp	R/W	Holding Register	06524	val_d2_fp100	When circulation is enabled and there is NO dhw consumption, then the DHW temperature is regulated to this value.	YES	YES	YES	YES
Exclude from vacation	R/W	Holding Register	06525	val_u1	Do not allow the Vacation mode	YES	YES	YES	YES
Exclude from standby	R/W	Holding Register	06526	val_u1	Do not allow the Standby mode	YES	YES	YES	YES
ITC CONTROLLERS									
ITC1									
Aggregated warning	R	Discrete Inputs	073xx						
Aggregated error	R	Discrete Inputs	07301		A problem is pending in ITC	YES	YES	YES	YES
Error - Inlet Sensor Failure	R	Discrete Inputs	07302		A critical problem is pending in ITC	YES	YES	YES	YES
Error - Servo Failure	R	Discrete Inputs	07303		Missing or broken sensor	YES	YES	YES	YES
Error - Return Sensor Failure	R	Discrete Inputs	07304		Missing or broken servo	YES	YES	YES	YES
Error - Outdoor Sensor Failure	R	Discrete Inputs	07305		Missing or broken sensor	YES	YES	YES	YES
Error - High temp cut-off activated	R	Discrete Inputs	07306		Missing or broken sensor	YES	YES	YES	YES
Error - Frost protection activated	R	Discrete Inputs	07307		Safety mechanism "high temp cut-off" is activated	YES	YES	YES	YES
			07308		Safety mechanism "frost protection" is activated	YES	YES	YES	YES
State	R	Input Register	07301	val_d1	1 IDLE 2 HEATING 3 COOLING 4 BLOCKED_HEATING 5 BLOCKED_COOLING	YES	YES	YES	YES
Blocking source	R	Input Register	07302	val_u1	Same as Heating/Cooling blocking source	YES	YES	YES	YES
Pump - Demand	R	Input Register	07303	val_u1	1 IDLE 2 ON	YES	YES	YES	YES
Pump - State	R	Input Register	07304	val_u1	1 IDLE 2 ON	YES	YES	YES	YES
Measured inlet temperature	R	Input Register	07305	val_d2_fp100	Measured temperature of the inlet heating/cooling water.	YES	YES	YES	YES
Desired inlet temperature	R	Input Register	07306	val_d2_fp100	Desired temperature of the inlet heating/cooling water. The value which the ITC regulator wants to meet.	YES	YES	YES	YES
Measured return temperature	R	Input Register	07307	val_d2_fp100	Measured return temperature	YES	YES	YES	YES
Main supplier temperature	R	Input Register	07308	val_d2_fp100	Main supplier temperature	-	YES	YES	YES
Name	R/W	Holding Register	7301-7316	val_utf8	String description (32 Bytes, UTF8, NULL terminated)	YES	YES	YES	YES
Regulator - P value	R/W	Holding Register	07317	val_d2_fp10	Proportional gain of temperature regulator	YES	YES	YES	YES
Regulator - I value	R/W	Holding Register	07318	val_u2	Integrating time of temperature regulator	YES	YES	YES	YES
Regulator - Hysteresis	R/W	Holding Register	07319	val_d2_fp100	Hysteresis	YES	YES	YES	YES
Heat curve - type	R/W	Holding Register	07320	val_u1	0 MANUAL 1 CALCULATED 2 UNDERFLOOR 3 RADIATORS	YES	YES	YES	YES
Heat curve - manual slope	R/W	Holding Register	07321	val_d2_fp10	Curve slope. Used only in MANUAL	YES	YES	YES	YES
Heat curve - parallel displacement	R/W	Holding Register	07322	val_d2_fp100	Shifts calculated temperature up/down	YES	YES	YES	YES
Heat curve - min inlet	R/W	Holding Register	07323	val_d2_fp100	Lowest possible temperature	YES	YES	YES	YES
Heat curve - max inlet	R/W	Holding Register	07324	val_d2_fp100	Highest possible temperature	YES	YES	YES	YES
Heat curve - gain	R/W	Holding Register	07325	val_d2_fp10	Static gain of desired temperature calculation	YES	YES	YES	YES
Return temp limiter - function	R/W	Holding Register	07326	val_u1	0 OFF 1 MIN 2 MAX	YES	YES	YES	YES
Return temp max limiter - Limit	R/W	Holding Register	07327	val_d2_fp100	Maximum allowed return temperature (limits inlet temperature)	YES	YES	YES	YES
Return temp max limiter - Gain	R/W	Holding Register	07328	val_d2_fp10	Return limiter proportional gain. Use high value fast acting system, low value for slow acting system.	YES	YES	YES	YES
Return temp max limiter - Priority over inlet	R/W	Holding Register	07329	val_u1	0 NO_PRIORITY 1 PRIORITY (return limiter can override "Heat curve - min inlet")	YES	YES	YES	YES
Return temp min limiter - Limit	R/W	Holding Register	07330	val_d2_fp100	Minimal allowed return temperature (limits inlet temperature)	YES	YES	YES	YES
Return temp min limiter - Gain	R/W	Holding Register	07331	val_d2_fp10	Return limiter proportional gain. Use high value fast acting system, low value for slow acting system.	YES	YES	YES	YES
Optimization - boost	R/W	Holding Register	07332	val_u1	Boost desired temperature by "Optimization - boost percent" for 1 hour 0 DISABLED 1 ENABLED	YES	YES	YES	YES
Optimization - boost percent	R/W	Holding Register	07333	val_u1	Boost percent	YES	YES	YES	YES
Optimization - ramping	R/W	Holding Register	07334	val_u1	Rise desired temperature over ramping time. 0 DISABLED 1 ENABLED	YES	YES	YES	YES
Optimization - ramping time	R/W	Holding Register	07335	val_u1	Ramping time	YES	YES	YES	YES
Frost protection - Mode	R/W	Holding Register	07336	val_u1	Activate heating in assigned loops when inlet temperature drops below "Frost protection - Temp"	YES	YES	YES	YES
Frost protection - Temp	R/W	Holding Register	07337	val_d2_fp100	Frost protection limit	YES	YES	YES	YES

	High Temp Cut-Off - Mode	R/W	Holding Register	07338	val_u1	Heating is blocked, when inlet temperature exceeds the limit. Alarm is raised, pump is switched off (ignoring all pump delay). 0 DISABLED 1 ENABLED	YES	YES	YES	YES
	High Temp Cut-Off - Temp	R/W	Holding Register	07339	val_d2_fp100	Limit temperature for High Temp Cut-Off	YES	YES	YES	YES
	Cooling Regulator - P value	R/W	Holding Register	07340	val_d2_fp10	Proportional gain of temperature regulator in cooling mode	-	YES	YES	YES
	Cooling Regulator - I value	R/W	Holding Register	07341	val_u2	Integrating time of temperature regulator in cooling mode	-	YES	YES	YES
	Cooling Regulator - Hysteresis	R/W	Holding Register	07342	val_d2_fp100	Hysteresis in cooling mode	-	YES	YES	YES
	Cooling inlet temp min	R/W	Holding Register	07343	val_d2_fp100	Lowest possible temperature in cooling mode	-	YES	YES	YES
	Cooling inlet temp max	R/W	Holding Register	07344	val_d2_fp100	Highest possible temperature in cooling mode	-	YES	YES	YES
ITC2	Same as ITC1			074xx			YES	YES	YES	YES
<b>HCC CONTROLLERS</b>										
<b>HCC1</b>										
	Aggregated warning	R	Discrete Inputs	07701		A problem is pending in ITC	YES	YES	YES	YES
	Aggregated error	R	Discrete Inputs	07702		A critical problem is pending in ITC	YES	YES	YES	YES
	Error - inlet sensor failure		Discrete Inputs	07703			YES	YES	YES	YES
	Error - High temp cut-off activated	R	Discrete Inputs	07704		Safety mechanism "high temp cut-off" is activated	YES	YES	YES	YES
	State	R	Input Register	07701	val_d1	1 IDLE 2 HEATING 3 COOLING 4 BLOCKED_HEATING 5 BLOCKED_COOLING	CHANGED	YES	YES	YES
	Blocking source	R	Input Register	07702	val_u1	Same as Heating/Cooling blocking source	YES	YES	YES	YES
	Pump - Demand	R	Input Register	07703	val_u1	1 IDLE 2 ON	YES	YES	YES	YES
	Pump - State	R	Input Register	07704	val_u1	1 IDLE 2 ON	YES	YES	YES	YES
	Measured inlet temperature	R	Input Register	07705	val_d2_fp100	Measured temperature of the inlet heating/cooling water.	YES	YES	YES	YES
	Desired inlet temperature	R	Input Register	07706	val_d2_fp100	Desired temperature of the inlet heating/cooling water. The value which the ITC regulator wants to meet.	YES	YES	YES	YES
	Name	R/W	Holding Register	07701-07716	val_utf8	String description (32 Bytes, UTF8, NULL terminated)	YES	YES	YES	YES
	Heat curve - type	R/W	Holding Register	07717	val_u1	0 MANUAL 1 CALCULATED 2 UNDERFLOOR 3 RADIATORS	YES	YES	YES	YES
	Heat curve - manual slope	R/W	Holding Register	07718	val_d2_fp10	Curve slope. Used only in MANUAL	YES	YES	YES	YES
	Heat curve - parallel displacement	R/W	Holding Register	07719	val_d2_fp100	Shifts calculated temperature up/down	YES	YES	YES	YES
	Heat curve - min inlet	R/W	Holding Register	07720	val_d2_fp100	Lowest possible temperature	YES	YES	YES	YES
	Heat curve - max inlet	R/W	Holding Register	07721	val_d2_fp100	Highest possible temperature	YES	YES	YES	YES
	Heat curve - gain	R/W	Holding Register	07722	val_d2_fp10	Static gain of desired temperature calculation	YES	YES	YES	YES
	High Temp Cut-Off - Mode	R/W	Holding Register	07723	val_u1	Heating is blocked, when inlet temperature exceeds the limit. Alarm is raised, pump is switched off (ignoring all pump delay). 0 DISABLED 1 ENABLED	YES	YES	YES	YES
	High Temp Cut-Off - Temp	R/W	Holding Register	07724	val_d2_fp100	Limit temperature for High Temp Cut-Off	YES	YES	YES	YES
HCC2	same as HCC1			078xx			YES	YES	YES	YES
HCC3	same as HCC1			079xx			-	YES	YES	YES
<b>H/C Source</b>										
<b>H/C Source</b>										
	Aggregated warning	R	Discrete Inputs	08101		A problem is pending in H/C Source	-	YES	YES	YES
	Aggregated error	R	Discrete Inputs	08102		A critical problem is pending in H/C Source	-	YES	YES	YES
	Error general failure	R	Discrete Inputs	08103		General failure	-	YES	YES	YES
	State	R	Input Register	08101	val_d1	1 IDLE 2 HEATING 3 COOLING 4 BLOCKED_HEATING 5 BLOCKED_COOLING	-	YES	YES	YES
<b>PERIPHERAL LIST</b>										
<b>Peripheral 1</b>										
	Aggregated warning	R	Discrete Inputs	51201		A problem is pending in Room	YES	YES	YES	YES
	Aggregated error	R	Discrete Inputs	51202		A critical problem is pending in Room	YES	YES	YES	YES
	Warning - low battery	R	Discrete Inputs	51203		Battery is low in the peripheral.	YES	YES	YES	YES
	Error - peripheral lost	R	Discrete Inputs	51204		Peripheral is not responding.	YES	YES	YES	YES
	Type	R	Input Register	51201	val_u2	Peripheral type - Sensor, Thermostat, ... (product number)	YES	YES	YES	YES
	SN	R	Input Register	51202-51203	val_u4	Serial number	YES	YES	YES	YES
	Owner	R	Input Register	51204	val_u2	000 - Location 001 - Room 1 ... 016 - Room 16 NOTE: Object address in this modbus table is used as owner_id	YES	YES	YES	YES
	Signal strength	R	Input Register	51205	val_d1	Peripheral Signal strength	YES	YES	YES	YES
	Peripheral name	R/W	Holding register	51201 - 51216	val_utf8	String description (32 Bytes, UTF8, NULL terminated)	YES	YES	YES	YES
Peripheral 2				513xx						
Peripheral 3				514xx						
...										
Peripheral 2-64				575xx						
<b>EXTERNAL DEVICES - Ventilation (see note)</b>										
<b>Ventilation 1</b>										
	Aggregated warning	R	Discrete Inputs	61001		A problem is pending in device	-	-	-	YES
	Aggregated error	R	Discrete Inputs	61002		A critical problem is pending in device	-	-	-	YES
	Warning - air filter lifetime expired	R	Discrete Inputs	61003		Air filter lifetime expired	-	-	-	YES
	Warning - air filter solar year passed	R	Discrete Inputs	61004		Air filter solar year passed from last air filter change	-	-	-	YES
	Warning - device specific	R	Discrete Inputs	61005		Read code from input register - Warning device specific	-	-	-	YES
	Error - device fault	R	Discrete Inputs	61006		General problem	-	-	-	YES
	Error - communication error	R	Discrete Inputs	61007		Communication error	-	-	-	YES
	Error - not compatible	R	Discrete Inputs	61008		Not compatible	-	-	-	YES
	Error - device specific	R	Discrete Inputs	61009		Read code from input register - Error device specific	-	-	-	YES
	Device model	R	Input Register	61001-61016	val_utf8	Device model	-	-	-	YES
	Warning - device specific code	R	Input Register	61017-61018	val_u4	Device specific warning code	-	-	-	YES
	Error - device specific code	R	Input Register	61019-61020	val_u4	Device specific error code	-	-	-	YES
	Device feature bits	R	Input Register	61021-61022	val_u4	Specific features (capabilities) device has 0x0001 - ALLOW_UNOCCUPIED 0x0002 - ALLOW_ECO 0x0004 - ALLOW_COMFORT 0x0008 - ALLOW_STOPPED 0x0010 - ALLOW_BOOST 0x0020 - ALLOW_BYPASS 0x0040 - FAN_PWM_CONTROL 0x0080 - FAN_BINARY_CONTROL 0x0100 - TEMP_INTAKE 0x0200 - TEMP_SUPPLY 0x0400 - TEMP_EXTRACT 0x0800 - TEMP_EXHAUST 0x1000 - HUMIDITY_INTAKE 0x2000 - HUMIDITY_EXTRACT 0x4000 - FAN_SPEED_FEEDBACK	-	-	-	YES

Note: Ventilation devices are connected using the Modbus RTU master function, this means for a Modbus slave connection only the TCP/IP option is available. More info in the TCP/IP chapter of this manual.

Ventilation state	R	Input Register	61023	val_u1	0 - STOPPED 1 - UNOCCUPIED 2 - ECONOMY 3 - COMFORT 4 - BOOST 5 - BLOCKED_STOPPED 6 - BLOCKED_UNOCCUPIED 7 - BLOCKED_ECONOMY 8 - BLOCKED_COMFORT 9 - BLOCKED_BOOST 10 - FAILURE 11 - MAINTENANCE	-	-	-	YES
Ventilation blocking	R	Input Register	61024	val_u1	Please check top of the document - GENERAL BLOCKING SOURCES	-	-	-	YES
Supply fan speed actual [rpm]	R	Input Register	61025	val_u2	Supply fan speed actual [rpm]	-	-	-	YES
Exhaust fan speed actual [rpm]	R	Input Register	61026	val_u2	Exhaust fan speed actual [rpm]	-	-	-	YES
Supply fan speed setpoint [%]	R	Input Register	61027	val_d2_fp100	Supply fan speed setpoint [%]	-	-	-	YES
Exhaust fan speed setpoint [%]	R	Input Register	61028	val_d2_fp100	Exhaust fan speed setpoint [%]	-	-	-	YES
Supply volume flow setpoint [m³/h]	R	Input Register	61029	val_u2	Supply volume flow setpoint [m³/h]	-	-	-	YES
Exhaust volume flow setpoint [m³/h]	R	Input Register	61030	val_u2	Exhaust volume flow setpoint [m³/h]	-	-	-	YES
Intake air temperature	R	Input Register	61031	val_d2_fp100	Intake air temperature	-	-	-	YES
Supply air temperature	R	Input Register	61032	val_d2_fp100	Supply air temperature	-	-	-	YES
Extract air temperature	R	Input Register	61033	val_d2_fp100	Extract air temperature	-	-	-	YES
Exhaust air temperature	R	Input Register	61034	val_d2_fp100	Exhaust air temperature	-	-	-	YES
Heat recovery bypass damper position [%]	R	Input Register	61035	val_d2_fp100	Heat recovery bypass damper position [%]	-	-	-	YES
Free cooling enabled	R	Input Register	61036	val_u1	Free cooling enabled	-	-	-	YES
Air filter last change	R	Input Register	61037-61038	val_u4	Timestamp, updates when register "Air filter lifetime used" is set to zero	-	-	-	YES

Device name	R/W	Holding register	61001-61016	val_utf8	String description (32 Bytes, UTF8, NULL terminated)	-	-	-	YES
Air filter lifetime	R/W	Holding Register	61017-61018	val_u4	Air filter lifetime (minutes) - maximum value is dependent on device model	-	-	-	YES
Air filter lifetime used	R/W	Holding Register	61019-61020	val_u4	Write 0 to reset timer	-	-	-	YES
Exhaust Fan Level Unoccupied [%]	R/W	Holding register	61021	val_d2_fp100	Exhaust Fan Level Unoccupied [%]	-	-	-	YES
Exhaust Fan Level Eco [%]	R/W	Holding register	61022	val_d2_fp100	Exhaust Fan Level Eco [%]	-	-	-	YES
Exhaust Fan Level Comfort [%]	R/W	Holding register	61023	val_d2_fp100	Exhaust Fan Level Comfort [%]	-	-	-	YES
Exhaust Fan Level Boost [%]	R/W	Holding register	61024	val_d2_fp100	Exhaust Fan Level Boost [%]	-	-	-	YES
Supply Fan Level Unoccupied [%]	R/W	Holding register	61025	val_d2_fp100	Supply Fan Level Unoccupied [%]	-	-	-	YES
Supply Fan Level Eco [%]	R/W	Holding register	61026	val_d2_fp100	Supply Fan Level Eco [%]	-	-	-	YES
Supply Fan Level Comfort [%]	R/W	Holding register	61027	val_d2_fp100	Supply Fan Level Comfort [%]	-	-	-	YES
Supply Fan Level Boost [%]	R/W	Holding register	61028	val_d2_fp100	Supply Fan Level Boost [%]	-	-	-	YES
Exhaust Fan Level Unoccupied [m³/h]	R/W	Holding register	61029	val_u2	Exhaust Fan Level Unoccupied [m³/h]	-	-	-	YES
Exhaust Fan Level Eco [m³/h]	R/W	Holding register	61030	val_u2	Exhaust Fan Level Eco [m³/h]	-	-	-	YES
Exhaust Fan Level Comfort [m³/h]	R/W	Holding register	61031	val_u2	Exhaust Fan Level Comfort [m³/h]	-	-	-	YES
Exhaust Fan Level Boost [m³/h]	R/W	Holding register	61032	val_u2	Exhaust Fan Level Boost [m³/h]	-	-	-	YES
Supply Fan Level Unoccupied [m³/h]	R/W	Holding register	61033	val_u2	Supply Fan Level Unoccupied [m³/h]	-	-	-	YES
Supply Fan Level Eco [m³/h]	R/W	Holding register	61034	val_u2	Supply Fan Level Eco [m³/h]	-	-	-	YES
Supply Fan Level Comfort [m³/h]	R/W	Holding register	61035	val_u2	Supply Fan Level Comfort [m³/h]	-	-	-	YES
Supply Fan Level Boost [m³/h]	R/W	Holding register	61036	val_u2	Supply Fan Level Boost [m³/h]	-	-	-	YES
Allow Stopped level	R/W	Holding register	61037	val_u1	Allow Stopped level 0 - NOT ALLOWED 1 - ALLOWED	-	-	-	YES
Allow Unoccupied level	R/W	Holding register	61038	val_u1	Allow Unoccupied level 0 - NOT ALLOWED 1 - ALLOWED	-	-	-	YES
Standby mode level	R/W	Holding register	61039	val_u1	0 - STOPPED 1 - UNOCCUPIED 2 - ECONOMY	-	-	-	YES
Vacation mode level	R/W	Holding register	61040	val_u1	0 - STOPPED 1 - UNOCCUPIED 2 - ECONOMY	-	-	-	YES
Heat exchange mode (recovery bypass)	R/W	Holding register	61041	val_u1	0 - ALWAYS ON 1 - AUTOMATIC	-	-	-	YES
Ventilation 2 reserved			611xx-612xx-613xx			-	-	-	YES

EXTERNAL DEVICES - Dehumidifier									
Dehumidifier Device 1									
Aggregated warning	R	Discrete Inputs	65001		A problem is pending in device	-	YES	YES	YES
Aggregated error	R	Discrete Inputs	65002		A critical problem is pending in device	-	YES	YES	YES
Warning - air filter lifetime expired	R	Discrete Inputs	65003		Air filter lifetime expired	-	YES	YES	YES
Warning - air filter solar year passed	R	Discrete Inputs	65004		Air filter solar year passed from last air filter change	-	YES	YES	YES
Error - HCW supplier	R	Discrete Inputs	65005		Heating/Cooling water supplier is not set	-	YES	YES	YES
Error - device fault	R	Discrete Inputs	65006		Device fault - general signal from device	-	YES	YES	YES
Type	R	Input Register	65001	val_u1	Device type 0 GENERIC 1 P300_S300 2 PC300_SC300	-	YES	YES	YES
Drying status	R	Input Register	65003	val_u1	0 NONE (function not available) 1 IDLE 2 DRYING 3 BLOCKED_DRYING	-	YES	YES	YES
Drying blocking	R	Input Register	65004	val_u1	Please check top of the document - GENERAL BLOCKING SOURCES	-	YES	YES	YES
Thermal integration status	R	Input Register	65005	val_u1	0 NONE (function not available) 1 IDLE 2 HEATING 3 COOLING 4 BLOCKED_HEATING 5 BLOCKED_COOLING	-	YES	YES	YES
Thermal integration blocking	R	Input Register	65006	val_u1	Please check top of the document - GENERAL BLOCKING SOURCES	-	YES	YES	YES
Thermal Integ. demand condition	R	Holding Register	65007	val_u1	100 - IN ANY ROOM 101 - IN ALL ROOMS 1-32 - PARTICULAR ROOM (Address of modbus object)	-	YES	YES	YES
Air filter last change	R	Input Register	65010-11	val_u4	Timestamp, updates when register "Air filter lifetime used" is set to zero	-	YES	YES	YES
Associated HCW supplier	R	Input Register	65012	val_u1	0 - NONE 73 .. TC1 (Address of modbus object) 74 .. TC2 (Address of modbus object) 77 .. HCC1 (Address of modbus object) 78 .. HCC2 (Address of modbus object) 79 .. HCC3 (Address of modbus object) 81 .. H/C Source (Address of modbus object)	-	YES	YES	YES

	Device name	R/W	Holding register	65001-65016	val_utf8	String description (32 Bytes, UTF8, NULL terminated)	-	YES	YES	YES
	Air filter lifetime	R/W	Holding Register	65017-65018	val_u4	Air filter lifetime (minutes)	-	YES	YES	YES
	Air filter lifetime used	R/W	Holding Register	65019-65020	val_u4	Write 0 to reset timer	-	YES	YES	YES
	Drying allow in mode	R/W	Holding Register	65021	val_u1	0 - IN COOLING MODE 1 - IN HEATING MODE 2 - IN BOTH	-	YES	YES	YES
	Drying cooling water	R/W	Holding Register	65022	val_d2_fp100	Desired cooling water temperature	-	YES	YES	YES
	Thermal integ. allow in mode	R/W	Holding Register	65023	val_u1	0 - IN COOLING MODE 1 - IN HEATING MODE 2 - IN BOTH	-	YES	YES	YES
	Thermal integ. heating water temp	R/W	Holding Register	65024	val_d2_fp100	Desired heating water temperature	-	YES	YES	YES
	Thermal integ. cooling water temp	R/W	Holding Register	65025	val_d2_fp100	Desired cooling water temperature	-	YES	YES	YES
	Dehumidifier Device 2			651xx			-	YES	YES	YES
	Dehumidifier Device 3			652xx			-	YES	YES	YES
	Dehumidifier Device 4			653xx			-	YES	YES	YES
	<b>GENERAL BLOCKING SOURCES</b>									
	0 NONE					Purpose of the modbus interface (Use cases)				
	1 UNKNOWN					* it is NOT a user interface				
	2 CONTACT					* it is NOT an installer interface				
	3 FLOOR_TEMP					* It shall allow following:				
	4 LOW_ENERGY					1. See all warnings and errors				
	5 AIR_TEMP					2. Optimize the system by expert (tuning)				
	6 DEW_POINT					a. Power consumption				
	7 OUTDOOR_TEMP					b. Reliability				
	8 FAULT (general fault, e.g. missing sensors)					c. Suppress activity of system parts (e.g. circulation)				
	9 FAULT_HTCO					3. Restrict user possibilities & reset user settings				
	10 PERIODIC_ACTIVATION					a. Set UI access levels				
	11 BMS					b. Reset temperature correction made by user (hotel)				
	12 DEADBAND					c. Basic setup - manual control				
	13 DRYING									
	14 HEATING/COOLING MODE									
	15 INSUFFICIENT DEMAND									
	16 COOLDOWN PERIOD									
	17 HCW SOURCE NOT RELEASED									
	18 ROOM MODE									
	19 SYSTEM IS INITIALIZING									
	20 SYSTEM IS SHUTTING DOWN									
	21 NO OUTPUT									
	22 FIRST OPEN ACTIVATION									
	23 ROOM WITH NO TEMPERATURE									
	The number of blocking sources is still growing. There can be another values than listed in this documentation.									

## General blocking sources

Table 1

- 1 UNKNOWN
- 2 CONTACT
- 3 FLOOR\_TEMP
- 4 LOW\_ENERGY
- 5 AIR\_TEMP
- 6 DEW\_POINT
- 7 OUTDOOR\_TEMP
- 8 FAULT (general fault, e.g. missing sensors)
- 9 FAULT\_HTCO
- 10 PERIODIC\_ACTIVATION
- 11 BMS
- 12 DEADBAND
- 13 DRYING
- 14 HEATING/COOLING MODE
- 15 INSUFFICIENT DEMAND
- 16 COOLDOWN PERIOD
- 17 HCW SOURCE NOT RELEASED
- 18 ROOM MODE
- 19 SYSTEM IS INITIALIZING
- 20 SYSTEM IS SHUTTING DOWN
- 21 NO OUTPUT
- 22 FIRST OPEN ACTIVATION
- 23 ROOM WITH NO TEMPERATURE

The number of blocking sources is still growing.  
There can be another values than listed in this documentation.

## Purpose of the modbus interface

(Use cases)

- \* it is NOT a user interface
- \* it is NOT an installer interface
- \* It shall allow following:
  1. See all warnings and errors
  2. Optimize the system by expert (tuning)
    - a. Power consumption
    - b. Reliability
    - c. Suppress activity of system parts (e.g. circulation)
  3. Restrict user possibilities & reset user settings
    - a. Set UI access levels
    - b. Reset temperature correction made by user (hotel)
    - c. Basic setup - manual control

NOTE: Ventilation devices are connected using the Modbus RTU master function, this means for a Modbus slave connection only the TCP/IP option is available. More info in the TCP/IP chapter of this manual.

## Value Component type

**Table 2**

0	Calefa controller
4	Sentio Display
5	Sentio Wired room thermostat
6	Sentio Wireless room thermostat
7	Sentio wired room sensor
8	Sentio wireless room sensor
9	Sentio wireless room thermostat w/IR-sensor
10	Sentio Extension module f/8 actuators
11	Sentio Extension module w/6 relays
12	Sentio wireless outdoor temperature sensor
13	Sentio wired outdoor temperature sensor
14	Sentio Smart radiator thermostat

## List of supported IANA time zones

Table 3

Area/Town	UTC offset	Zone number
<b>Factory</b>		<b>0</b>
Europe/Amsterdam	+01:00	1024
Europe/Astrakhan	+04:00	1025
Europe/Berlin	+01:00	1026
Europe/Bratislava	+01:00	1027
Europe/Brussels	+01:00	1028
Europe/Budapest	+01:00	1029
Europe/Copenhagen	+01:00	1030
Europe/Dublin	+00:00	1031
Europe/Helsinki	+02:00	1032
Europe/Istanbul	+03:00	1033
Europe/Kaliningrad	+02:00	1034
Europe/Kirov	+03:00	1035
Europe/London	+00:00	1036
Europe/Madrid	+01:00	1037
Europe/Moscow	+03:00	1038
Europe/Oslo	+01:00	1039
Europe/Paris	+01:00	1040
Europe/Prague	+01:00	1041
Europe/Riga	+02:00	1042
Europe/Rome	+01:00	1043
Europe/Samara	+04:00	1044
Europe/Saratov	+04:00	1045
Europe/Stockholm	+01:00	1046
Europe/Ulyanovsk	+04:00	1047
Europe/Vilnius	+02:00	1048
Europe/Volgograd	+03:00	1049
Europe/Warsaw	+01:00	1050
Atlantic/Faroe	+00:00	2048
Atlantic/Reykjavik	+00:00	2049
America/Cancun	-05:00	3072

Area/Town	UTC offset	Zone number
<b>Factory</b>		<b>0</b>
America/Chihuahua	-07:00	3073
America/Danmarkshavn	+00:00	3074
America/Godthab	-03:00	3075
America/Hermosillo	-07:00	3076
America/Matamoros	-06:00	3077
America/Mexico_City	-06:00	3078
America/Ojinaga	-07:00	3079
America/Scoresbysund	-01:00	3080
America/Thule	-04:00	3081
America/Tijuana	-08:00	3082
Asia/Anadyr	+12:00	4096
Asia/Barnaul	+07:00	4097
Asia/Chita	+09:00	4098
Asia/Irkutsk	+08:00	4099
Asia/Kamchatka	+12:00	4100
Asia/Khandyga	+09:00	4101
Asia/Krasnoyarsk	+07:00	4102
Asia/Magadan	+11:00	4103
Asia/Novokuznetsk	+07:00	4104
Asia/Novosibirsk	+07:00	4105
Asia/Omsk	+06:00	4106
Asia/Sakhalin	+11:00	4107
Asia/Srednekolymsk	+11:00	4108
Asia/Tomsk	+07:00	4109
Asia/Ust-Nera	+10:00	4110
Asia/Vladivostok	+10:00	4111
Asia/Yakutsk	+09:00	4112
Asia/Yekaterinburg	+05:00	4113

### Factory timezone

Factory timezone is read-only. It is used for compatibility reasons. E.g. When updating from SW which didnt support timezones. UTC offset is last known, DST rules are same as for Europe. When Factory is set, you should change it to supported timezone.