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Set up instructions

ModBus Registers

To set up communication between the IR controller and the master controller

EN

V 1.02

ModBus Registers

Control options:

DHW heating

- user control, switching DHW on/off
- change of the desired DHW temperature

ThSt zone

- user control, switching cooling on/off
- change of the desired thermal store temperature

Zone 1-6, separately adjustable for individual zones

- user control, switching zone on/off
- user control, switching heating on/off
- user control, switching cooling on/off
- change of the desired temperature for heating
- change of the desired temperature for cooling

Heat recovery ventilation (HRV1-HRV2), separately adjustable for individual HRVs

- user control, switching HRV zone on/off
- boost 1/2/3

DHW recirculation control

- user control, switching recirculation on/off
- temporary recirculation on (immediate recirculation function)

Requirement for HP1 power input,

- function for control of the heat pump speed from PV overflows

Temperature replacement (taking over temperature from the sensors of the master controller)

- outdoor temperature takeover
- room temperature takeover from separate heating zones
- room humidity takeover from separate heating zones

Specifications of holding registers in table number 1

ATTENTION, when taking over control of individual elements of the controller, the time programs, summer/winter transitions, desired temperature/decrease during the setback period will be turned off. It is assumed that the master controller will have its own time programs and transitions.

Reading options:

- reading values on IR controller sensors
- reading real desired temperatures
- general fault and warning
  (Table 2, read input registers)
- zone status **(Table 3, zone status)**
- heat pump status **(Table 4 heat pump status)**

Protocoll: Modbus TCP/IP

Port: 502

Explanation:

Heart bit

- Register for determining the communication status with the master. Master sends 1, IR returns 0. If the value 1 is not written at least once every 5 minutes, writing to the holding registers is prohibited. This status is signaled by the value -1 in the heart bit.
- When the ModBus TCP slave function is enabled, the communication status is shown on the diagram at the user level. Loss of communication is shown by a cross. Ongoing communication is shown by the OK symbol.

If communication is lost, the last known value remains set.

Factor

- Factor of reading/writing a value. For example, factor 10 and value 22.3 is in the register as 223.

Min/Max

- Minimum/maximum accepted value. Attempting to write outside this limit will send -9999 to the given register.

Writing to an unauthorized register

- If a register is written to that is not allowed for writing on the IR controller service level, -8888 will be sent to that register.

Due to the different approach of individual manufacturers of the master controller to the use of register addresses, the register value may shift.
(The address of the first register starts with 0000 / the address of the first register starts with 0001)

When setting the registers, check whether the register being set actually corresponds to the given function / value on the sensor…

Changes in ModBus				
name	**description**	**IR SW version**	**protocoll version**	**date**
		1.0.11.0	1.00	12.11.2024
Safe value cancelled	If communication between the IR and the master controller is lost, the last recorded values will remain at the controlled inputs.	1.0.11.4	1.01	8.5.2025
Zone states	Zone states have been added to Table 3.		1.02	1.9.2025
HP states - RTC	Table 5 with RTC heat pump states has been added.		1.02	1.9.2025
HP states - CTC	Table 4 has been updatet with new heat pumps states, including additional states for the 700 series.	1.0.11.8	1.02	1.9.2025

Table 1 Holding registres					
register number	**Holding registres (memory 4x)**	**read/write**	**Factor**	**Min**	**Max**
1	heart bit (at least once/5min send 1 and IR returns 0, if 5min without writing, IR returns -1)	R/W	1	-1	1
2	DHW zone control	R/W	1	0	1
3	desired DHW temperature	R/W	10	0	900
4	ThSt zone control	R/W	1	0	1
5	desired ThSt temperature	R/W	10	0	900
6	zone 1 control	R/W	1	0	1
7	zone 1 control - heating	R/W	1	0	1
8	zone 1 control - cooling	R/W	1	0	1
9	desired room temperature for heating, Z1	R/W	10	-100	500
10	desired room temperature for cooling, Z1	R/W	10	-100	500
11	zone 2 control	R/W	1	0	1
12	zone 2 control – heating	R/W	1	0	1
13	zone 2 control – cooling	R/W	1	0	1
14	desired room temperature for heating, Z2	R/W	10	-100	500
15	desired room temperature for cooling, Z2	R/W	10	-100	500
16	zone 3 control	R/W	1	0	1
17	zone 3 control – heating	R/W	1	0	1
18	zone 3 control – cooling	R/W	1	0	1
19	desired room temperature for heating, Z3	R/W	10	-100	500
20	desired room temperature for cooling, Z3	R/W	10	-100	500
21	zone 4 control	R/W	1	0	1
22	zone 4 control – heating	R/W	1	0	1
23	zone 4 control – cooling	R/W	1	0	1
24	desired room temperature for heating, Z4	R/W	10	-100	500
25	desired room temperature for cooling, Z4	R/W	10	-100	500
26	zone 5 control	R/W	1	0	1
27	zone 5 control – heating	R/W	1	0	1
28	zone 5 control – cooling	R/W	1	0	1
29	desired room temperature for heating, Z5	R/W	10	-100	500
30	desired room temperature for cooling, Z5	R/W	10	-100	500
31	zone 6 control	R/W	1	0	1
32	zone 6 control – heating	R/W	1	0	1
33	zone 6 control – cooling	R/W	1	0	1
34	desired room temperature for heating, Z6	R/W	10	-100	500
35	desired room temperature for cooling, Z6	R/W	10	-100	500

register number	Holding registres (memory 4x)	read/write	Factor	Min	Max
36	outdoor temperature replacement	R/W	10	-880	800
37	room temperature replacement, Z1	R/W	10	-100	500
38	room humidity replacement, Z1	R/W	10	0	1000
39	room temperature replacement, Z2	R/W	10	-100	500
40	room humidity replacement, Z2	R/W	10	0	1000
41	room temperature replacement, Z3	R/W	10	-100	500
42	room humidity replacement, Z3	R/W	10	0	1000
43	room temperature replacement, Z4	R/W	10	-100	500
44	room temperature replacement, Z5	R/W	10	0	1000
45	room humidity replacement, Z5	R/W	10	-100	500
46	náhrada prostorové vlhkosti Z5	R/W	10	0	1000
47	room temperature replacement, Z6	R/W	10	-100	500
48	room humidity replacement, Z6	R/W	10	0	1000
49	control of HRV1	R/W	1	0	1
50	HRV1 – boost 1	R/W	1	0	1
51	HRV1 – boost 2	R/W	1	0	1
52	HRV1 – boost 3	R/W	1	0	1
53	control of HRV2	R/W	1	0	1
54	HRV2 – boost 1	R/W	1	0	1
55	HRV2 – boost 2	R/W	1	0	1
56	HRV2 – boost 3	R/W	1	0	1
57	control of recirculation	R/W	1	0	1
58	temporary recirculation on	R/W	1	0	1
59	requirement for HP1 power input, PV function. (W)	R/W	1	0	10000

Table 2 Read input registers			
register number	**Read input registers (memory 3x)**	**read/write**	**Factor**
1	outdoor sensor	R	10
2	DHW upper	R	10
3	DHW lower	R	10
4	DHW lower	R	10
5	ThSt sensor lower	R	10
6	solar system	R	10
7	fireplace or solid fuel boiler	R	10
8	pool	R	10
9	heating water, Z1	R	10
10	heating water, Z2	R	10
11	heating water, Z3	R	10
12	heating water, Z4	R	10
13	heating water, Z5	R	10
14	heating water, Z6	R	10
15	room temperature, Z1	R	10
16	room temperature, Z2	R	10
17	room temperature, Z3	R	10
18	room temperature, Z4	R	10
19	room temperature, Z5	R	10
20	room temperature, Z6	R	10
21	humidity, Z1	R	10
22	humidity, Z2	R	10
23	humidity, Z3	R	10
24	humidity, Z4	R	10
25	humidity, Z5	R	10
26	humidity, Z6	R	10
27	spare	R	10
28	spare	R	10
29	spare	R	10
30	spare	R	10
31	HS pressure	R	10
32	actual desired DHW temperature	R	10
33	actual desired ThSt zone temperature	R	10
34	desired heating temperature (sources requirement)	R	10
35	actual desired room temperature, Z1	R	10
36	actual desired room temperature, Z2	R	10
37	actual desired room temperature, Z3	R	10
38	actual desired room temperature, Z4	R	10
39	actual desired room temperature, Z5	R	10
40	actual desired room temperature, Z6	R	10
41	fault in general	R	1
42	warning in general	R	1
43	zone 1 status	R	1

register number	Read input registers (memory 3x)	read/write	Factor
44	zone 2 status	R	1
45	zone 3 status	R	1
46	zone 4 status	R	1
47	zone 5 status	R	1
48	zone 6 status	R	1
49	HP1 status	R	1
50	HP2 status	R	1
51	HP3 status	R	1
52	HP4 status	R	1
53	HP5 status	R	1
54	HP6 status	R	1
55	HP7 status	R	1
56	HP8 status	R	1
57	HP9 status	R	1
58	HP10 status	R	1

Table 3 zone states	
Value	**Zone status**
0	unknown state
1	disabled by service
2	disabled by user
3	too low system pressure
4	blocked externally
5	thermal store below HP min. temp.
6	fastboiler/fireplace loading
7	thermal store below zone min.temp.
8	max. zone temperature exceeded
9	cooling below zone min. temperature
10	cooling in another zone
11	heating blocked in set period
12	heating blocked by outdoor temper.
13	time program - setback, zone OFF
14	room temperature reached
15	air cooling
16	cooling active
17	floor dryingprogram
18	permanent comfort - low outdoor temperature
19	time program - comfort temperature
20	time program - setback temperature
21	thermal store overheated
22	holidays
23	comfort temperature continuos
24	setback temperature continuos (RC)
25	DHW being heated
26	holidays
27	holidays
28	defrosting below min. temperature
29	frost protection

Table 4 heat pumps states CTC	
Value	**HP status**
0	OFF - service
1	OFF - user
2	fault
3	establish. communic.
4	return - max.T
5	flow - max.T
6	ambient - min.T
7	ambient - max.T
8	sup.refrig.vapor
9	high T earth circ.
10	vapor - low T
11	vapor - high T
12	cond. - high T
13	EEV-low T intake
14	EEV-low T vapor
15	EEV-high T vapor
16	EEV-low superheat
17	EEV-high p cond.
18	high pressure
19	defrosting
20	min.run time
21	DHW heating
22	rebooting
23	heating
24	RC blocking
25	vol.flow control
26	ready
27	low evapor.temp.-IR
28	vol.flow control-IR
29	IR internal error
30	external blocking
31	heating from the PV
32	waiting for PV
33	low flow
34	PWM pump failure
35	PWM mod.disconnected
36	compr.driver error
37	min.run time - DHW
38	min.run time - PV
39	heating - perfrm.lim
40	CH low press. block.
41	block.low cond..temp
42	undervoltage block.
43	blocked-price of el.

Value	HP status
44	blocked B2b0-Ex700
45	blocked B2b1-Ex700
46	blocked B2b2-Ex700
47	blocked B2b3-Ex700
48	blocked B2b4-Ex700
49	blocked B2b5-Ex700
50	blocked B2b6-Ex700
51	blocked B2b7-Ex700
52	blocked B2b8-Ex700
53	blocked B2b9-Ex700
54	blocked B2b10-Ex700
55	blocked B2b11-Ex700
56	blocked B2b12-Ex700
57	blocked B2b13-Ex700
58	blocked B2b14-Ex700
59	blocked B2b15-Ex700
60	min.run time -DHW-PV
61	DHW heating from PV

Table 5 heat pumps states RTC	
Value	**HP status**
0	OFF - service
1	OFF - user
2	fault
3	establish. communic.
4	return - max.T
5	flow - max.T
6	ambient - min.T
7	ambient - max.T
8	sup.refrig.vapor
9	high T earth circ
10	current out of range
11	phase curr.o.o.range
12	IPM module protect.
13	comp. lubricating
14	high press.switch
15	high pressure
16	comp. preheating
17	sup.refrig.vapor
18	evapor. low temp
19	voltage out of range
20	out.temp.o.o.range
21	power restr.out.temp
22	comp.restr.evap.p.
23	defrosting
24	min.run time
25	DHW heating
26	rebooting
27	heating
28	RC blocking
29	vol.flow control
30	ready
31	IR internal error
32	external blocking
33	PWM mod.disconnected
34	PWM pump failure
35	low flow
36	waiting for PV
37	min.run time - DHW
38	min.run time - PV
39	heating from the PV
40	cooling
41	flow - min.T
42	HP type not selected
43	CH low press. block.

Value	HP status
44	low press.switch
45	power restart
46	blocked-price of el.
47	min.run time -DHW-PV
48	DHW heating from PV

The ModBus TCP slave function is factory disabled and the tile with the master control settings is hidden. To activate it, please contact a service technician or Regulus remote support.

After activation, the MODBUS TCP SLAVE tile becomes available in the OTHER section of the service level. Here, you can turn on the function and enable writing to individual parts of the system.

Temperature takeover (taking over the temperature from the sensors of the master control) is performed in the service level of the section OTHERS / INPUTS OUTPUTS / INPUT MANAGEMENT

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