4.12 Handling faults

Temperature out of range

When the room temperature is outside the measuring range, i.e. above 49 °C (120 °F) or below 0 °C (32 °F), the limiting temperatures blink, e.g. "0 °C (32 °F)" or "49 °C (120 °F)".
In addition, the heating output is activated if the current setpoint is not set to "OFF", the thermostat is in heating mode and the temperature is below 0 °C (32 °F).
For all other cases, no output is activated.

The thermostat resumes Comfort mode after the temperature returns to within the measuring range.

Fault "Er1" on display

When the built-in sensor fails and no external sensor is connected, the thermostat shows the fault message "Er1" on the display. The thermostat needs to be replaced if the room temperature needs to be measured with the built-in sensor.

4.13 Infrared remote control

Use the IRA211 infrared remote control to operate a thermostat with built-in infrared receiver. The following operations can be carried out remotely:

- Select Protection, Comfort or Auto Timer mode
- Adjust setpoint in Comfort mode
- Select fan mode "Automatic" or "Manual"

A buzzer in the thermostat indicates remote control command reception.
Infrared remote control can be disabled via parameter P70.

4.14 DIP switches

Use the DIP switches at the rear of the thermostat to commission the thermostat's basic application prior to snapping it to the base.

– The application is set via DIP switches 1…3
– The function of the control outputs (2-position or 3-position) is set via DIP switches 4 and 5 for RDG 100, RDG100T and RDG100T/H.
– For RDG160T.. (DC 0…10 V), DIP switches 4 select either DC fan (DIP4=OFF) or 3-speed fan (DIP4=ON). DIP5 set to ON disables the time program functions and the time is not visible anymore on the display.

For details concerning connection of peripheral devices and setting of the DIP switches, refer to the Mounting Instructions:

– [4] M3181.1 (RDG100, RDG100T)
– [5] M3181.2 (RDG110)
– [6] M3181.5 (RDG160T)
– [7] M3181.4 (RDG100T/H)
– [9] M3183.1 (RDG110U)
– [10] M3183.2 (RDG160TU)

Note

During startup, the thermostat reloads the control parameter factory settings after each change of DIP switch setting.

4.15 Control parameters

A number of control parameters can be readjusted to optimize control performance. These parameters can also be set during operation without opening the unit. In the event of a power failure, all control parameter settings are retained.

The control parameters are assigned to 2 levels:
- "Service level", and
- "Expert level" with "Diagnostics and test"

The "Service level" contains a small set of parameters to set up the thermostat for the HVAC system and to adjust the user interface. These parameters can usually be adjusted any time.
Change parameters at the "Expert level" carefully, as they impact control performance and functionality of the thermostat.

Parameter setting

Change the parameters as follows:

Enter only "Service level"

1. Press left and right button simultaneously for 4 seconds.
   Release and press the right button again within 2 seconds until the display shows "P01".
   Continue with step 2.

Enter "Expert level" and "Diagnostics and test"

1. Press left button and right button simultaneously for 4 seconds.
   Release and press the left button again within 2 seconds until the temperature disappears. Turn the rotary knob counterclockwise min. ½ rotation.
   The display shows "Pxx".
   Continue with step 2.

Adjusting parameters

2. Select the required parameter by turning the rotary knob.
3. Press button ✓ (OK); the current value of the selected parameter starts blinking and can be changed by turning the rotary knob.
4. Press button ✓ (OK) to confirm the adjusted value or press button ⇦ (Esc) to cancel the change.
5. If you wish to adjust additional parameters, repeat steps 2…4.
6. Press button ⇦ (Esc) to leave the parameter setting mode.

Resetting parameters

The factory setting for the control parameters can be reloaded via parameter P71, by changing the value to "ON". Confirm by pressing the right button.
The display shows "8888" during reloading.

Buttons of the RDG100T/H

Button ✓ = bottom, button ⇦ = top (see operating instructions B3181.4).

4.15.1 Parameters of the "Service level" – Degree Celsius

Parameter	Name **Service level**	Factory setting	Range	RDG100	RDG100T	RDG100T/H	RDG110 RDG110U	RDG160T RDG160TU	Dependencies
P01	Control sequence	With 2-pipe/ 2-stage: 1 = cooling only With 4-pipe: 4 = H/C	0 = heating only 1 = cooling only 2 = H/C changeover manually 3 = H/C changeover automatically 4 = heating and cooling	✓	✓	✓	✓	✓	
P02	Operating mode profile (operating mode button)	1	1 = (Auto) - Comfort – Protection 2 = (Auto) - Comfort - Economy - Prot	✓	✓	✓	✓	✓	P01
			3 = Comfort – Protection 4 = Comfort – Economy – Protection	x	✓	✓	x	✓	
P03	Fan mode selection	0	0 = Auto – Manual 1 = Manual 2 = Auto – Manual – Prot	✓	✓	✓	✓	✓	P52
			3 = Auto – Prot	x	x	x	x	✓	
P04	Selection of °C or °F	0 (°C)	0 = degrees Celsius (°C) 1 = degrees Fahrenheit (°F)	✓	✓	✓	✓	✓	
P05	Sensor calibration (internally, externally)	0 K	– 3...3 K	✓	✓	✓	✓	✓	
P06	Standard temperature display	0	0 = room temperature 1 = setpoint	✓	✓	✓	✓	✓	
P07	Display info line (2nd line of LCD)	0	0 = --- (no display) 1 = °C and °F	0..1	x	x	0..1	x	
P08	Comfort setpoint	21 °C	5...40 °C	✓	✓	✓	✓	✓	
P09	Min. setpoint for Comfort mode	5 °C	5...40 °C	✓	✓	✓	✓	✓	
P10	Max. setpoint for Comfort mode	35 °C	5...40 °C	✓	✓	✓	✓	✓	
P11	Economy heating setpoint	15 °C	OFF, 5...WcoolE-saving; (WcoolE-saving = 40 °C max.)	✓	✓	✓	✓	✓	
P12	Economy cooling setpoint	30 °C	OFF, WHeatEco...40 °C; (WHeatEco = 5 °C min.)	✓	✓	✓	✓	✓	
P13	Electric heater in cooling mode	ON	ON: Enabled OFF: Disabled	✓	✓	✓	✓	✓	Appl
P14	Button lock function	0	0 = unlocked 1 = auto locked 2 = manual locked	✓	✓	✓	✓	✓	
P15	Fan stage in dead zone (Comfort)	0	0 = disabled 1 = stage 1 (heating and cooling) 2 = stage 1 (cooling only)	✓	✓	✓	✓	✓	

✓ Parameter available

× Parameter not available

Note Parameter display depends on selected application and function.

4.15.2 Parameters of the "Expert level with diagnostics and test" – Degree Celsius

Parameter	Name	Factory setting	Range	RDG100	RDG100T	RDG100T/H	RDG110 RDG110U	RDG160T RDG160TU	Dependencies
	Expert level								
P30	P-band/switching differential in heating mode	2 K	0.5…6 K	✓	✓	✓	✓	✓	
P31	P-band/switching differential in cooling mode	1 K	0.5…6 K	✓	✓	✓	✓	✓	
P32	P-band/switching differential for radiator	2 K	0.5…6 K	✓	✓	✓	✓	✓	Appl
P33	Dead zone in Comfort mode	2 K	0.5…5 K	✓	✓	✓	✓	✓	Appl
P34	Setpoint differential (w_D)	2 K	0.5…5 K	✓	✓	✓	✓	✓	Appl
P35	Integral action time RDG100..	5 min.	0…10 min.	✓	✓	✓	x	x	P46,
	RDG160T/160TU	45 min.	0…120 min.	x	x	x	x	✓	P47
P36	Heating/cooling changeover switching point cooling (X1/X2)	16 °C	10…25 °C	✓	✓	✓	✓	✓	P38, P40
P37	Heating/cooling changeover switching point heating (X1/X2)	28 °C	27…40 °C	✓	✓	✓	✓	✓	P38, P40
P38	Functionality of X1	1 = external sensor	0 = --- (no function) 1 = room temp ext/ret air temp (AI) 2 = H/C changeover (AI/DI) 3 = operating mode contact [DI] 4 = dewpoint sensor (DI) 5 = enable electric heater (DI) 6 = fault input (DI) 9 = Supply air sensor	✓ 0..6	✓ 0..6	✓ 0..6	✓ 0..6	✓ 0..9	
P39	Operating action of X1 if digital input	NO	NO = normally open/open NC = normally closed/closed	✓	✓	✓	✓	✓	P38
P40	Functionality of X2	2 = H/C changeover	0 = --- (no function) 1 = room temp ext/ret air temp (AI) 2 = H/C changeover (AI/DI) 3 = operating mode contact [DI] 4 = dewpoint sensor. (DI) 5 = enable electric heater (DI) 6 = fault input (DI) 9 = Supply air sensor	✓ 0..6	✓ 0..6	✓ 0..6	✓ 0..6	✓ 0..9	
P41	Operating action of X2 if digital input	NO	NO = normally open/open NC = normally closed/closed	✓	✓	✓	✓	✓	P40
P42	Functionality of D1	3 = operating mode changeover	0 = --- (no function) 2 = H/C changeover (DI) 3 = operating mode contact [DI] 4 = dewpoint sensor (DI) 5 = enable electric heater (DI) 6 = fault input (DI)	✓ 0..6	✓ 0..6	✓ 0..6	✓ 0..6	✓ 0..6	
P43	Operating action of D1 if digital input	NO	NO = normally open/open NC = normally closed/closed	✓	✓	✓	✓	✓	P42
P44	Running time of Y1/Y2 output (only with modulating PI control)	150 s	20…300 s	✓	✓	✓	x	x	P46
P45	Running time of Y3/Y4 output (only with modulating PI control)	150 s	20…300 s	✓	✓	✓	x	x	P47
P45	Power of electric heater on Q2 (for adaptive temperature compensation)	0 kW	0.0…1.2 kW	x	x	x	x	✓	
P46	Output Y1/Y2 (if not parameterized as 3-pos.)	On/Off (1)	1 = On/Off 2 = PWM	✓	✓	✓	x	x	Appl
P46	Outputs Y10 (DC) or Q1 (2-pos)	DC 0...10 V (2)	1 = On/Off 2 = DC 0…10V	x	x	x	x	✓	Appl
P46	Load current of electric heater on Y21 (for adaptive temperature compensation, not available for RDG110U)	1 A	1...5 A	x	x	x	✓	x	Appl
P47	Output Y3/Y4 (if not parameterized as 3-pos.)	On/Off (1)	1 = On/Off 2 = PWM	✓	✓	✓	x	x	Appl
P47	Outputs Y20 (DC) or Q2 (2.pos)	DC 0...10 V (2)	1 = On/Off 2 = DC 0…10V	x	x	x	x	✓	Appl
P48	Min. output on time 2-position control output	1 min.	1...20 min.	✓	✓	✓	✓	✓	P46
P48	Min. output ON time on Q1, Q2 and Q3, Relay function P72, P73, P74 (=2,3,4,5):	1 min.	1...20 min.	x	x	x	x	✓	Appl P7x
P49	Min. output off time 2-position control output	1 min.	1...20 min.	✓	✓	✓	✓	✓	P47
P49	Min. output OFF time on Q1, Q2 and Q3 Relay function P72, P73, P74 (=2,3,4,5):	1 min.	1...20 min.	x	x	x	x	✓	Appl P7x
P50	Purging function (only when changeover with local sensor is selected)	OFF	OFF: Not active 1…5 min: Active with selected duration	✓	✓	✓	✓	✓	P38, P40
P51	Floor heating limit temperature	OFF	OFF, 10...50 °C	✓	✓	✓	✓	✓	P38, P40

✓ Parameter available

✕ Parameter not available

Notes
- P46, P47: Setting to 2-position or 3-position is made with DIP switches 4 and 5.
- P45 (RDG160T..) and P46 (RDG110) to compensate for heat dissipation of the electric heater relay.
- If no sensors or switches are connected, it is not necessary to disable the inputs (P38, P40 or P42 = no function), the thermostat recognizes if a sensor is connected (but diagnostic shows "Err").

Parameter	Name Expert level	Factory setting	Range	RDG100	RDG100T	RDG100T/H	RDG110 RDG110U	RDG160T RDG160TU	Dependencies
P52	Fan operation	1	0 = disabled 1 = enabled 2 = heating only 3 = cooling only	✓	✓	✓	✓	✓	
P53	Fan speed	3-speed	1 = 1-speed 2 = 3-speed	✓	✓	✓	✓	x	P52
P53	Fan speed	DC 0...10 V	1 = 1-speed fan 2 = 3-speed fan 3 = DC 0...10 V (ECM fan)	x	x	x	x	✓	P52 DIP4
P54	Fan overrun time (only when electric heater is used)	60 s	0...360 s	✓	✓	✓	✓	✓	P52, Appl
P55	Switching point fan speed high	100%	80..100%	✓	✓	✓	✓	✓	P52
	ECM fan max. output	ECM: 80%	ECM: fan min…100%	x	x	x	x	✓	P52
P56	Switching point fan speed medium	65%	30...75%	✓	✓	✓	✓	✓	P52
	ECM fan min. output	ECM: 30%	ECM: 1%...fan max.	x	x	x	x	✓	P52
P57	Switching point fan speed low	10%	1...15%	✓	✓	✓	✓	✓	P52
	ECM: Switching point fan	ECM:10%	ECM: 1..100%	x	x	x	x	✓	P52
P58	Fan start booster	ON	ON: Enabled OFF: Disabled	✓	✓	✓	✓	✓	P52
P59	Fan min. on time	2 min.	1...6 min	✓	✓	✓	✓	✓	P52
P60	Fan kick interval in Comfort mode (time until next kick)	OFF	0…89 min, OFF	✓	✓	✓	✓	✓	P52
P61	Fan kick interval in Economy mode (time until next kick)	OFF	0…359 min, OFF	✓	✓	✓	✓	✓	P52
P62	Clean filter reminder running time	OFF (0)	OFF, 100…9900 hours	✓	✓	✓	✓	✓	P52
P63	Minimum supply air temperature	OFF	OFF, 0…P64 °C	x	x	x	x	✓	P38, P40
P64	Maximum supply air temperature	OFF	OFF, 0…P64 °C	x	x	x	x	✓	P38, P40
P65	Protection heating setpoint	8 °C	OFF, 5…W Cool Prot; (W Cool Prot = 40 °C max.)	✓	✓	✓	✓	✓	
P66	Protection cooling setpoint	OFF	OFF, W Heat Prot…40; (W Heat Prot = 5 °C min.)	✓	✓	✓	✓	✓	
P67	Fan start delay RDG100../110/110U RDG160T/160TU	0 s	0...180 s 0...360 s	✓	✓	✓	✓	✓	P52, P46, P47
P68	Extension Comfort period	OFF (0)	OFF(0); 15...360 min	✓	✓	✓	✓	✓	P02
P69	Temporary setpoint Comfort mode (see also Comfort setpoint P08)	OFF	OFF = disabled ON = enabled	✓	✓	✓	✓	✓	
P70	Infrared receiver	ON	OFF = disabled ON = enabled	x	✓	✓	x	✓	
P71	Reload factory settings	OFF	OFF = disabled ON = reload start	✓	✓	✓	✓	✓	
P72	Output Q1 function	0	0 = No function 1= Switch OFF in Protection 2= Switch ON in H/C demand (2-pipe) 3= Switch ON in H demand (4-pipe) 4= Switch ON in C demand (4-pipe) 5= Status active sequence (H or C)	x	x	x	x	✓	App
P73	Output Q2 function	0	0 = No function 1= Switch OFF in Protection 2= Switch ON in H/C demand (2-pipe) 3= Switch ON in H demand (4-pipe) 4= Switch ON in C demand (4-pipe) 5= Status active sequence (H or C)	x	x	x	x	✓	App
P74	Output Q3 function	0	0 = No function 1= Switch OFF in Protection 2= Switch ON in H/C demand (2-pipe) 3= Switch ON in H demand (4-pipe) 4= Switch ON in C demand (4-pipe) 5= Status active sequence (H or C)	x	x	x	x	✓	App

✓ Parameter available

× Parameter not available