



RDF300, RDF300.02, RDF340



RDF400.01

Semi Flush-mount Room Temperature Controllers with LCD

RDF300...
RDF340...
RDF400...

for 2-pipe, 2-pipe with el. heater and 4-pipe fan coil units
for use with compressors in DX type equipment

- RDF300/RDF400 AC 230 V operating voltage, on/off or 3-position control outputs
- RDF340... AC 24 V operating voltage, DC 0...10 V control outputs
- Output for 3-speed or 1-speed fan
- Two multifunctional inputs for keycard contact, external sensor, etc.
- Operating modes: Comfort, Energy Saving and Protection
- Automatic or manual heating/cooling changeover
- Adjustable commissioning and control parameters
- Minimum and maximum setpoint limitation
- Mounting on recessed rectangular conduit box, 60.3 mm fixing centers

Additional RDF300.02 features

- Backlit LCD

Additional RDF400.01 features

- Backlit LCD
- Infrared remote control receiver
- Auto Timer mode with 8 programmable timers

Use

Applications

To control the room temperature in individual rooms and zones that are:

- Heated or cooled with 2-pipe fan coil units
- Heated or cooled with 2-pipe fan coil units with electrical heater
- Heated and cooled with 4-pipe fan coil units
- Heated or cooled with compressor in DX-type equipment
- Heated or cooled with compressor in DX-type equipment with electrical heater
- Heated and cooled with compressor in DX-type equipment

The RDF300.../RDF400... controls:

- One single or 3-speed fan
- One or two on/off valve actuators
- One on/off valve actuator and one 1-stage electrical heater
- One 3-position valve actuator
- One 1-stage compressor in DX-type equipment or one 1-stage compressor with electrical heater

The RDF340... controls:

- One single or 3-speed fan
- One or two DC 0...10 V valve actuators
- One DC 0...10 V valve actuator and one modulating electrical heater (DC 0...10 V)

Use in systems with:

- Heating or cooling mode
- Automatic heating/cooling changeover
- Manual heating/cooling changeover
- Heating and cooling mode (e.g. 4-pipe system)

Functions

- Maintain room temperature via built-in temperature sensor or external room temperature / return air temperature sensor
- Automatic or manual changeover between heating and cooling mode
- Select applications via DIP switches
- Select operating mode via the operating mode button on the controller
- Single or 3-speed fan control (automatic or manual)
- Display current room temperature or setpoint in °C and/or °F
- Minimum and maximum setpoint limitation
- Keypad lock (automatic and manual)
- Two multifunctional inputs, freely selectable for:
 - Operating mode switchover contact (key card)
 - Automatic heating/cooling changeover sensor
 - External room temperature or return air temperature
 - Dewpoint sensor
 - Electrical heater enable
 - Alarm input
- Advanced fan control function, i.e. fan kick, fan start, selectable fan operation (enable, disable or depending on heating or cooling mode)
- Purge function together with 2-port valve in a 2-pipe changeover system
- Reminder to clean filters
- Floor heating temperature limit
- Reload factory settings for commissioning and control parameters
- Weekly time program: 8 programmable timers to switch over between Comfort and Economy mode (RDF400.01)
- Optional backlit LCD (RDF300.02/RDF400.01)
- Optional infrared remote control (RDF400.01)

Applications

The controller supports following applications, which can be configured by DIP-switch on the inner side of the controller front panel. Depending on the type, on/off or modulating control outputs are available.

2-pipe fan coil unit heating or cooling

Application and Control output	DIP-switch	Type reference
2-pipe / 1-stage compressor on/off		RDF300 RDF400
2-pipe modulating, DC 0...10 V		RDF340
2-pipe modulating, 3-position		RDF300 RDF400
2-pipe / 1-stage compressor with electrical heater, on/off		RDF300 RDF400
2-pipe with electrical heater modulating, DC 0...10 V Note: modulating el heater		RDF340
4-pipe / compressor for H+C on/off		RDF300 RDF400
4-pipe modulating, DC 0...10 V		RDF340

2-pipe fan coil unit with el. heater heating or cooling, with auxiliary heater

4-pipe fan coil unit heating and cooling

Type summary

Type reference	Operating Voltage	Control output			Time program	LCD Backlight	Infrared receiver ¹⁾	Housing Colour
		on/off	3pt	DC 0..10V				
RDF300 ²⁾	AC 230V	✓	✓					white
RDF300.02	AC 230V	✓	✓			✓		white
RDF300.02/SL	AC 230V	✓	✓			✓		silver
RDF400.01	AC 230V	✓	✓		✓	✓	✓	white
RDF400.01/SL	AC 230V	✓	✓		✓	✓	✓	silver
RDF340	AC 24V			✓				white

1) Infrared remote control is to be ordered as separate item

2) Not available in EU

Equipment combinations

	Type of unit	Type reference	Data Sheet
	Infrared remote control 	IRA210	3059
	Cable temperature sensor 	QAH11.1	1840
	Room temperature sensor 	QAA32	1747
	Condensation detector / Supply unit 	QXA2000 / AQX2000	1542
<i>on / off actuators</i>	Electromotoric on / off valve and actuator (only available in AP, UAE, SA and IN) 	MVI.../MXI...	4867
	Electromotoric on / off actuator 	SFA21...	4863
	Thermal actuator (for radiator valve) 	STA21...	4893
	Thermal actuator (for small valves 2.5 mm) 	STP21...	4878
<i>3-position actuators</i>	Zone valve actuators (only available in AP, UAE, SA and IN) 	SUA...	4830
	Electrical actuator, 3-position (for radiator valve) 	SSA31...	4893
	Electrical actuator, 3-position (for small valve 2,5 mm) 	SSP31...	4864
	Electrical actuator, 3-position (for small valve 5,5 mm) 	SSB31...	4891
	Electromotoric actuator, 3-position (for valves 5.5 mm) 	SQS35...	4573
<i>DC 0..10 V actuators</i>	Electrical actuator, DC 0..10V (for radiator valve) 	SSA61...	4893
	Electrical actuator, DC 0..10V (for small valve 2,5 mm) 	SSP61...	4864
	Electrical actuator, DC 0..10V (for small valves 5.5 mm) 	SSB61...	4891
	Electromotoric actuator, DC 0..10V (for valves 5.5 mm) 	SQS65...	4573
	Thermal actuator, DC 0..10V (for small valves and radiator valves) 	STS61	4880

Accessories

Type of unit	Type reference	Data Sheet
Changeover mounting kit (50 pcs/package)	ARG86.3	1840
Adapter plate 82mm x 82 mm x 10 mm for conduit	ARG70.3	-

Ordering

When ordering, indicate both product number and name:

E.g. **RDF300 room temperature controller**

Order the **IRA210** infrared remote control separately.

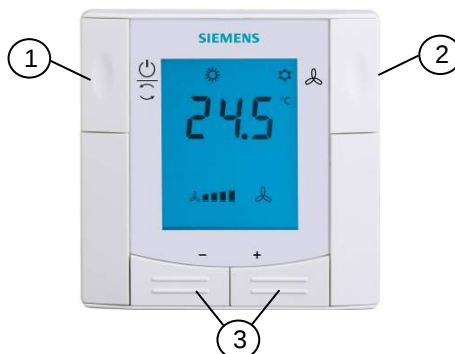
Order valve actuators separately.

The controller consists of 2 parts:

- Front panel accommodating the electronics, operating elements and built-in room temperature sensor.
- Mounting base with the power electronics.

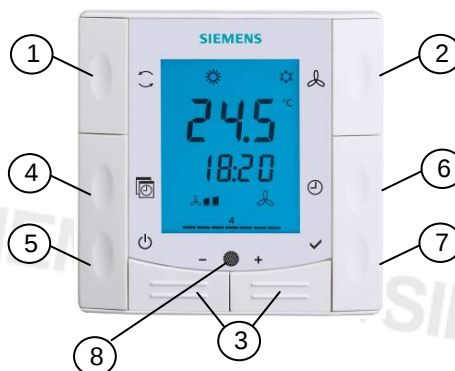
The rear of the mounting base contains the screw terminals. The base fits on a rectangular conduit box with 60.3 mm fixing centers. Slide the front panel in the mounting base and snap on.

Operation and settings RDF300.../RDF340...



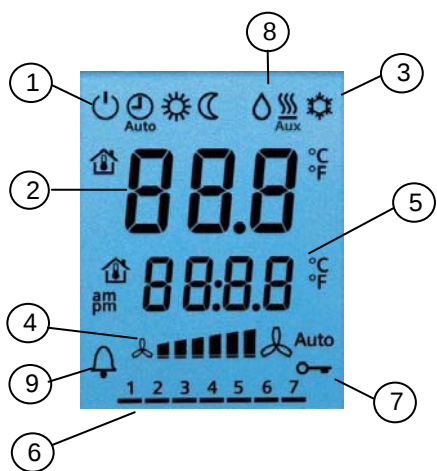
1. Operating mode selector/Standby
2. Change fan operation
3. Adjust setpoint and control parameters

RDF400...



1. Change operating mode selector
2. Change fan operation
3. Adjust setpoint, control parameters and time of day
4. Auto Timer program
5. Standby
6. Set time of day and weekday
7. Confirm
8. Infrared receiver

Display

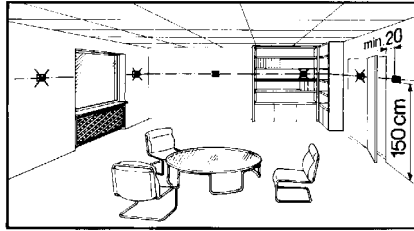


1. Operating mode
 - Standby mode
 - Auto Timer mode*
 - Comfort mode
 - Energy Saving mode

2. Display room temperature, setpoints and control parameters.
 - Symbol used to display the current room temperature
3. Heating/cooling mode
 - Cooling mode
 - Heating mode,
 - Electrical heater active
4. Fan mode
 - Auto fan active
 - Fan speed low, medium, high
5. Additional user information (RDF3xx) or current time of day (RDF400)
6. Weekday 1..7 (1 = Monday/7 = Sunday)*
7. Keypad lock active
8. Condensation in room (dewpoint sensor active)
9. Indicate alarm or reminder

* only on RDF400...

Mount the room controller on a recessed rectangular conduit box with 60.3mm fixing centers. Do not mount on a wall in niches or bookshelves, behind curtains, above or near heat sources, or exposed to direct solar radiation. Mount about 1.5 m above the floor.



Mounting



- Devices must be mounted on clean, dry indoor place and not be exposed to dripping or splashing

Wiring



See the mounting instructions M3076 enclosed with the controller.

- Comply with local regulations to wire, fuse and earth the controller.
- Properly size the cables to the controller, fan and valve actuators for AC 230 V mains voltage.
- Use only valve actuators rated for AC 230 V on RDF300.../RDF400... .
- The AC 230 V mains supply line must have an external fuse or circuit breaker with a rated current of no more than 10 A.
- Isolate the cables of SELV inputs X1-M/X2-M if the conduit box carries AC 230 V mains voltage.
- Inputs X1-M or X2-M of different units (e.g. summer/winter switch) may be connected in parallel with an external switch. Consider overall maximum contact sensing current for switch rating.
- No metal conduits
- No cables provided with a metal sheath
- Disconnect from supply before opening the cover

Commissioning

Set the controller application via the DIP switches before snapping the front panel on the mounting base.

After power is applied, the controller carries out a reset during which all LCD segments flash indicating that the reset was correct. After the reset, which takes about 3 seconds, the controller is ready for commissioning by qualified HVAC staff.

The control parameters of the controller can be set to ensure optimum performance of the entire system (see basic documentation P3076).

Control sequence

- The control sequence may need to be set via parameter P01 depending on the application. The factory setting for the 2-pipe application is "Cooling only"; and "Heating and Cooling" for the 4-pipe application.

Compressor-based application

- When the controller is used with a compressor, the minimum output on-time (parameter P48) and off-time (parameter P49) for Y11/Y21 must be adjusted to avoid damaging the compressor and shortening its life.

Calibrate sensor

- Recalibrate the temperature sensor if the room temperature displayed on the controller does not match the room temperature measured. To do this, change parameter P05.

Setpoint and range limitation

- We recommend to review the setpoints and setpoint ranges (parameters P08...P12) and change them as needed to achieve maximum comfort and save energy.

Disposal



The device is classified as waste electronic equipment in terms of the European Directive 2002/96/EC (WEEE) and should not be disposed of as unsorted municipal waste. The relevant national legal rules are to be adhered to. Regarding disposal, use the systems setup for collecting electronic waste. Observe all local and applicable laws.

Technical data

⚠ Power supply

Operating voltage	
RDF300.../RDF400...	AC 230 V +10/-15 %
RDF340...	SELV AC 24 V ±20 %

Frequency	50/60 Hz
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Power consumption	Max. 8 VA
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Outputs

Fan control Q1, Q2, Q3-N	AC 230 V
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Rating	Max. 5(2) A
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Control output Y11-N/Y21-N (N.O.)	AC 230 V
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Rating	Max. 5(2) A
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Control output Y10-G0/Y20-G0	SELV DC 0...10 V
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Resolution	39 mV
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Current	Max. ±1 mA
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Inputs

Multifunctional input X1-M/X2-M	
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Temperature sensor input:	
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Type	QAH11.1 (NTC)
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Digital input:	
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Operating action	Selectable (N.O./N.C.)
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Contact sensing	SELV DC 0...5 V/max 5 mA
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Insulation against mains voltage (SELV)	4 kV, reinforced insulation
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Function input:	Selectable
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External temperature sensor, heating/cooling changeover sensor, operating mode switchover contact, dewpoint monitor contact, enable electrical heater contact, alarm contact	
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Operational data

Switching differential, adjustable	
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Heating mode	(P30)	2 K (0.5...6K)
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Cooling mode	(P31)	1 K (0.5...6K)
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Setpoint setting and range	
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☀ Comfort mode	(P08)	21°C (5...40 °C)
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☾ Energy Saving mode	(P11-P12)	15°C/30°C (OFF, 5...40 °C)
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⏻ Standby	(P65-P66)	8°C/OFF (OFF, 5...40 °C)
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Multifunctional input X1/X2	Selectable 0...6
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Input X1	3: (P38) operating mode switchover
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Input X2	2: (P40) heating/cooling changeover sensor
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Built-in room temperature sensor	
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Measuring range	0...49 °C
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Accuracy at 25 °C	< ± 0.5 K
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Temperature calibration range	± 3.0 K
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Settings and display resolution	
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Setpoints	0.5 °C
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Current temperature value displayed	0.5 °C
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Environmental
conditions

Operation	As per IEC 721-3-3
Climatic conditions	Class 3K5
Temperature	0...+50 °C
Humidity	<95 % r.h.

Transport	As per IEC 721-3-2
Climatic conditions	Class 2K3
Temperature	–25...+60 °C
Humidity	<95 % r.h.
Mechanical conditions	Class 2M2

Storage	As per IEC 721-3-1
Climatic conditions	Class 1K3
Temperature	–25...+60 °C
Humidity	<95 % r.h.

Standards

 conformity	
EMC directive	2004/108/EC
Low-voltage directive	2006/95/EC

 N474 C-tick conformity to	
EMC emission standard	AS/NSZ 4251.1:1999

 Reduction of hazardous substances	2002/95/EC
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Product standards

Automatic electrical controls for household and similar use	EN 60730–1
Special requirements for temperature-dependent controls	EN 60730–2-9
Electronic control type	2.B (microdisconnection on operation)

Electromagnetic compatibility	
Emissions	IEC/EN 61000-6-3
Immunity	IEC/EN 61000-6-2

Protective class	II as per EN 60730
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Pollution class	Normal
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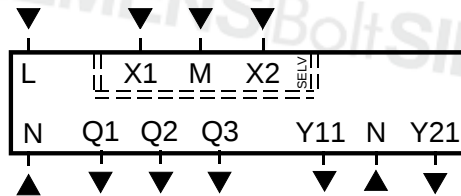
Degree of protection of housing	IP 30 to EN 60529
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General

Connection terminals	Solid wires or prepared stranded wires 1 x 0.4...2.5 mm ² or 2 x 0.4...1.5 mm ²
Housing front color	RAL 9003 white, or Similar to RAL 9006 silver
Weight	0.220 kg

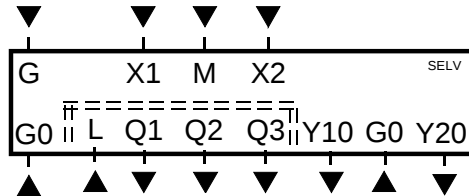
Connection terminals

RDF300.../RDF400...



- L, N Operating voltage AC 230 V
- Q1 Control output "Fan speed 1 AC 230 V"
- Q2 Control output "Fan speed 2 AC 230 V"
- Q3 Control output "Fan speed 3 AC 230 V"
- Y11, Y21 Control output "Valve" AC 230 V (N.O., for normally closed valves), output for compressor or output for electrical heater
- X1, X2 Multifunctional input for temperature sensor (e.g. QAH11.1) or potential-free switch
- M Measuring neutral for sensor and switch

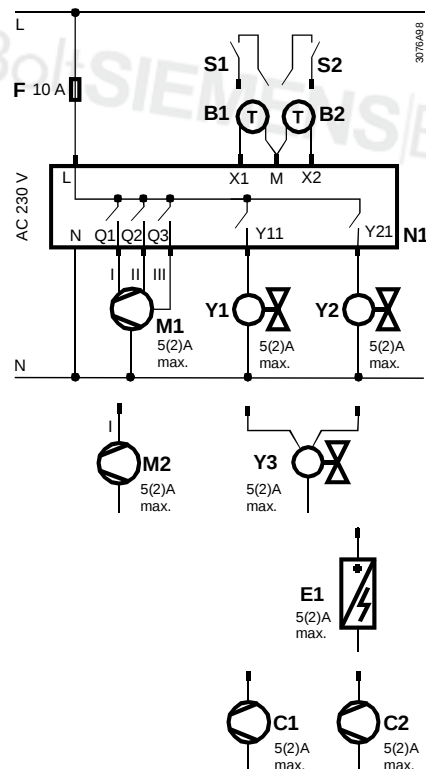
RDF340...



- G, G0 Operating voltage controller AC 24 V
- L Operating voltage for fan AC 230 V
- Q1 Control output "Fan speed 1 AC 230 V"
- Q2 Control output "Fan speed 2 AC 230 V"
- Q3 Control output "Fan speed 3 AC 230 V"
- Y10, Y20 Control output for 0...10 V actuator
- X1, X2 Multifunctional input for temperature sensor (e.g. QAH11.1) or switch
- M Measuring neutral for sensor and switch

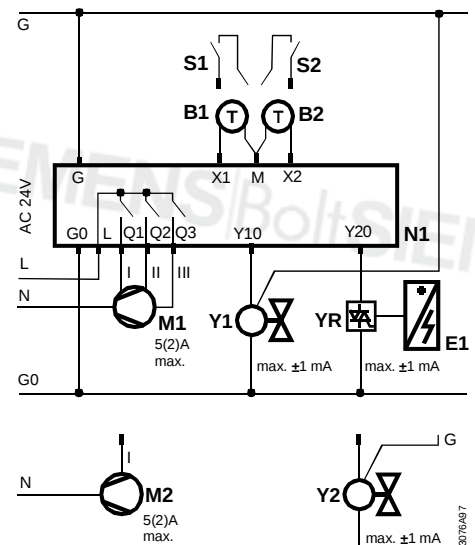
Connection diagrams

RDF300..., RDF400...



- N1 Room temperature controller RDF300.../RDF400...
- M1 3-speed fan
- M2 1-speed fan
- Y1, Y2 Valve actuator
- E1 Electrical heater
- S1, S2 Switch (keycard, window contact, etc.)
- B1, B2 Temperature sensor (return air temperature, external room temperature, changeover sensor, etc.)

RDF340...



- N1 Room temperature controller RDF340...
- M1 3-speed fan
- M2 1-speed fan
- Y1, Y2 Valve actuator
- YR 0...10 signal converter/current valve
- E1 Electrical heater
- S1, S2 Switch (keycard, window contact, etc.)
- B1, B2 Temperature sensor (return air temperature, external room temperature, changeover sensor, etc.)

Dimensions

Dimensions in mm

