

Flush-mounted room thermostat with weekly time program

RDF660T



For 2-pipe, 2-pipe with electric heater, and 4-pipe fan coil units

- AC 230 V operating voltage
- Large, backlit display
- Infrared remote control receiver
- Auto Timer mode with 8 programmable timers
- On/Off or 3-position control outputs
- ECM fan DC 0...10 V output
- Operating modes: Comfort, Economy and Protection
- Control depending on the room or the return air temperature
- Automatic or manual heating/cooling changeover
- Minimum and maximum limitation of room temperature setpoint
- 2 multifunctional inputs for keycard contact, window contact or external sensor
- Adjustable commissioning and control parameters
- User and parameter settings can be retained or restored with power loss to previous mode, Comfort mode or Protection mode
- Mounting on round and square conduit boxes, with 60 mm fixing centers

Applications

Room temperature control in individual rooms and zones:

- 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

The room thermostat controls:

- One ECM fan
- One or two on/off valve actuators
- One on/off valve actuator and one 1-stage electric heater
- One 3-position valve actuator
- One 1-stage compressor with electric heater

Used in systems with:

- Heating or cooling
- Automatic heating/cooling changeover
- Manual heating/cooling changeover
- Heating and cooling (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
- Select application via DIP switches
- Select operating mode via operating mode button on the thermostat
- ECM fan control (automatic or manual)
- Display current room temperature or setpoint in °C and/or °F
- Minimum and maximum setpoint limitation
- Key lock (automatic and manual)
- 2 multifunctional inputs, freely selectable for:
 - External room temperature sensor or return air temperature sensor (AI)
 - Automatic heating/cooling changeover sensor (AI)
 - Window contact (DI)
 - Dew point sensor (DI)
 - Electrical heater enabled (DI)
 - Fault input (DI)
 - Monitor input (DI)
 - Monitor input (AI)
 - Automatic heating/cooling changeover sensor (DI)
 - Presence detector (DI)
 - Hotel keycard (DI)
- Advanced fan control function, i.e. fan kick, fan start, selectable fan operation (enable, disable or depending on heating or cooling)
- Purge function together with 2-port valve in a 2-pipe changeover system
- Reminder to clean filters
- Floor heating temperature limit

- User and parameter settings can be retained in case of power failure and operating mode can be returned to the previous operating mode, Comfort or Protection (depends on P27)
- Reload factory settings for commissioning and control parameters
- 7-day time program (can be disabled via P77): 8 programmable timers to switch over between Comfort and Economy
- Infrared remote control

Type summary

Product no.	Stock no.	Operating voltage	Control outputs			Fan types		Time program	Backlit LCD	Infrared receiver ¹⁾	Suitable conduit box	Color
			On/Off	3-pos	DC 0...10 V	3-speed	DC 0...10 V					
RDF660T	S55770-T434	AC 230 V	✓	✓	-	-	✓	✓	✓	✓	Square or round	White

¹⁾Order infrared remote control separately

Ordering

- When ordering, specify both product number/stock number and name: e.g. RDF660T / S55770-T434 room thermostat
- Order valve actuators and accessories separately
- Order the IRA211 (S55770-T166) infrared remote control separately

Accessories

Description		SSN	Data sheet
Changeover mounting kit (50 pcs / package)		ARG86.3	N3009
Plastic mounting spacer for flush-mounted thermostats to increase the headroom in the conduit box by 10 mm		ARG70.3	N3009

Note: Order accessories separately.

Equipment combinations

Type of unit		Product no.	Data sheet ¹⁾
Cable temperature or changeover sensor, cable length 2.5 m NTC (3 kΩ at 25 °C)		QAH11.1	1840
Room temperature sensor NTC (3 kΩ at 25 °C)		QAA32	1747
Cable temperature sensor cable length 4 m NTC (3 kΩ at 25 °C)		QAP1030/UFH	1854
Condensation monitor		QXA21..	A6V10741072

On/Off actuators

Type of unit		Product no.	Data sheet ^{*)}
Electromotive On/Off actuator		SFA21..	4863
Electromotive On/Off valve and actuator (only available in AP, UAE, SA and IN)		MVI../MXI..	A6V11251892
Zone valve actuator (only available in AP, UAE, SA and IN)		SUA..	4832
Thermal actuator (for radiator valves)		STA23...	4884
Thermal actuator (for small valves 2.5 mm)		STP23...	4884

3-position actuators

Type of unit		Product no.	Data sheet ^{*)}
Electric actuator, 3-position (for radiator valves)		SSA31..	4893
Electric actuator, 3-position (for 2- and 3-port valves/V..P45)		SSC31	4895
Electric actuator, 3-position (for small valves 2.5 mm)		SSP31..	4864
Electric actuator, 3-position (for small valves 5.5 mm)		SSB31..	4891
Electric actuator, 3-position (for small valve 5 mm)		SSD31..	4861
Electric actuator, 3-position (for valves 5.5 mm)		SAS31..	4581

^{*)} The documents can be downloaded from <http://siemens.com/bt/download>.

Mechanical design

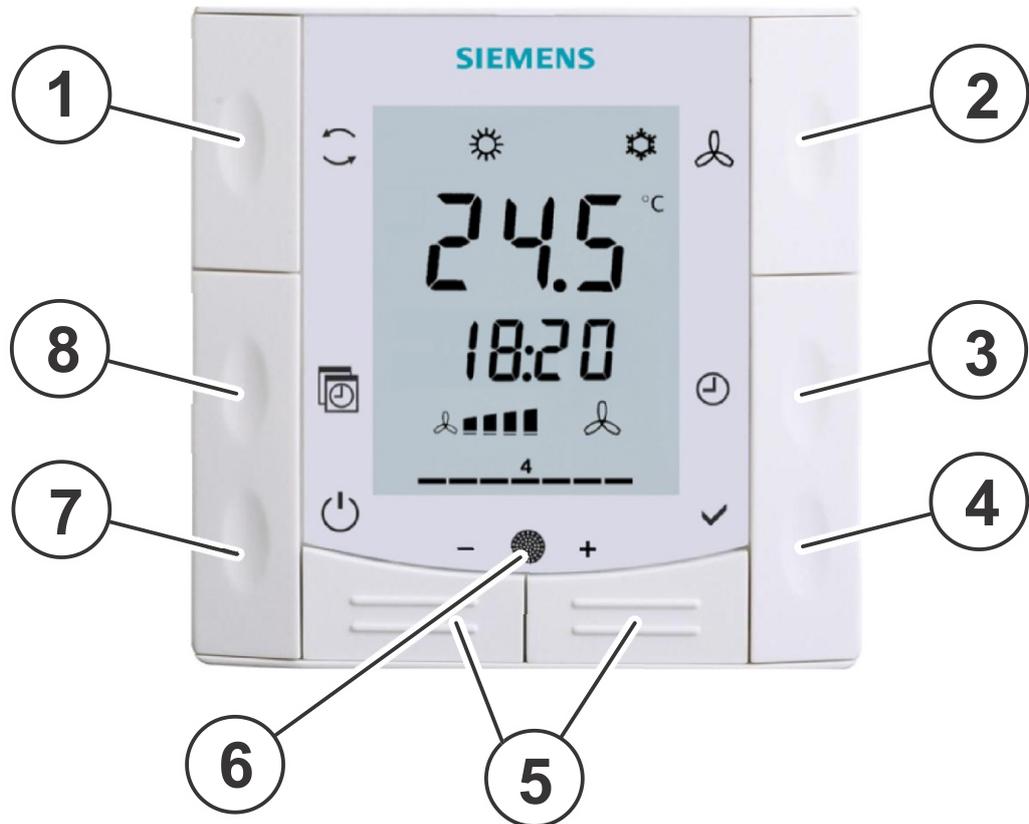
The thermostats consist of 2 parts:

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

The rear of the mounting base contains the screw terminals.

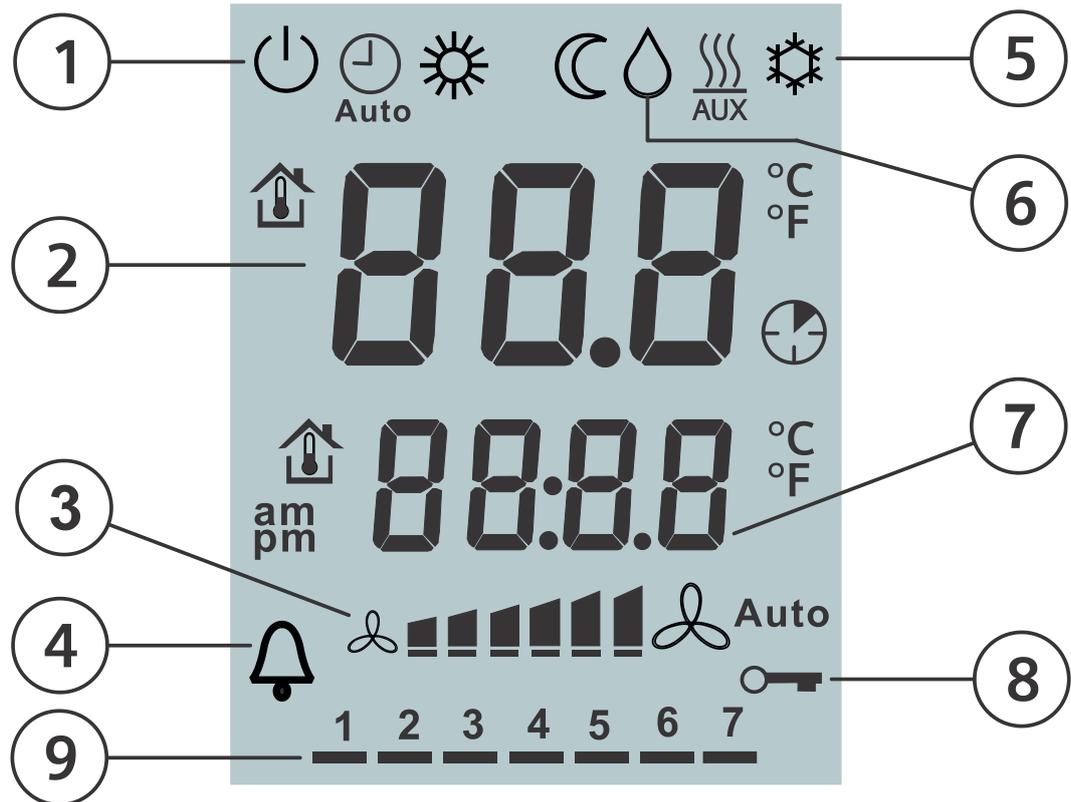
Slide the front panel in the mounting base and snap on.

Operation and settings



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

Display



1. Operating mode
 - Protection
 - Auto timer mode
 - Comfort
 - Economy
2. Display room temperature, setpoints and control parameters.
 - Symbol to display the current room temperature
3. Fan mode
 - Auto fan active
 - Fan speed low, medium, high
4. Indicate fault or reminder
5. Heating/cooling mode
 - Cooling
 - Heating
 - Electrical heater active
6. Condensation in room (dewpoint sensor active)
7. Room temperature, setpoint or current time of day
8. Key lock active
9. Weekday 1...7 (1 = Monday/7 = Sunday)

Title	Document ID
Operating instructions	A6V12064527
Basic documentation	A6V12166490
CE declarations	A5W00156993A
RCM	A5W00156996A
Environmental product declaration	A5W00139322A

Related documents such as environmental declarations, CE declarations, etc., can also be downloaded at the following Internet address:

<http://siemens.com/bt/download>

Security



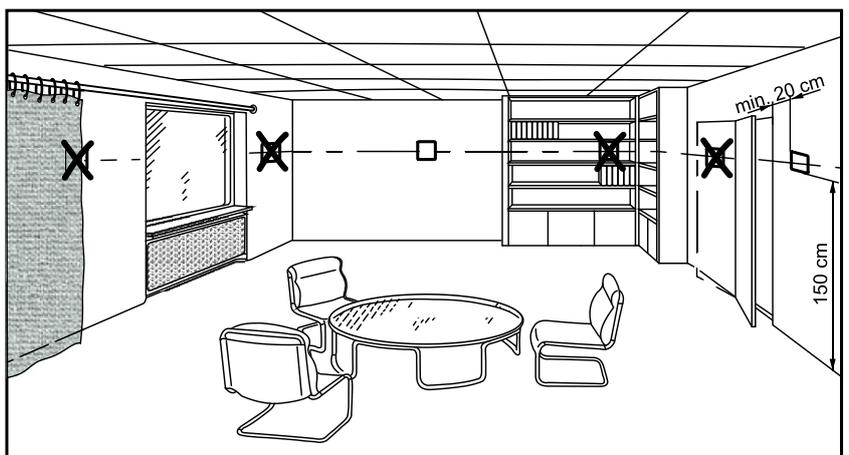
⚠ CAUTION

National safety regulations

Failure to comply with national safety regulations may result in personal injury and property damage.

- Observe national provisions and comply with the appropriate safety regulations.

Mounting and installation



Mounting

- Mount the room thermostat on the conduit box.
- 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.
- Mount the room thermostat in a clean, dry indoor place without direct airflow from a heating / cooling device, and not exposed to dripping or splash water.
- Before removing the front cover, disconnect the power supply.

Wiring

- See Mounting Instructions A6V12064527 enclosed with the thermostat.
- ⚠ Wire, protect and earth in compliance with local regulations.
- Adapt the line diameters to the rated value of the installed overcurrent protection device as per local regulations.
- ⚠ Use only valve actuators rated for AC 230 V.
- ⚠ The AC 230 V mains supply line must have an external 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 metal sheathing.
- ⚠ Disconnect the thermostat from power supply before removing from the mounting plate.
- ⚠ The device does not support hot-plug.

Commissioning

Set the thermostat application via the DIP switches before snapping the front panel onto the mounting base.

After power is applied, the thermostat resets all LCD segments light up indicating that resetting was correct. After reset, which takes about 3 seconds, the thermostat is ready for commissioning by qualified HVAC staff.

The control parameters of the thermostat can be set to ensure optimum performance of the entire system (see basic documentation A6V12166490).

Note

After power failure, the thermostat restarts in the same mode as before, Comfort or Protection (depends on P27).

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 thermostat is used with a compressor, adjust the minimum output On-time (P48) and Off-time (P49) for Y1/Y2 to avoid damaging the compressor or shortening its life due to frequent switching.

Calibrate sensor Recalibrate the temperature sensor if the room temperature displayed on the thermostat does not match the room temperature measured (after minimum 1 hour of operation). To do this, change P05.

Setpoint and range limitation We recommend reviewing the setpoints and setpoint ranges (P08...P12) and changing them as needed to achieve maximum comfort and save energy.

Disposal



The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Open Source Software (OSS)

All open source software components used within the product (including their copyright holders and the license conditions) can be found from the website

<https://www.siemens.com/download?A6V12274589>.

Warranty

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

Power supply	
Operating voltage	AC 230 V
Frequency	50/60 Hz
Power consumption	9 VA
External supply line protection (EU)	Circuit breaker max. 10 A characteristic B, C, D as per EN 60898 or power source with current limitation of max. 10 A
 <ul style="list-style-type: none"> • No internal fuse! <p>External preliminary protection with max. C 10 A circuit breaker in the supply line required under all circumstances.</p>	

Outputs	
DC fan control DC 0...10 V; Y50	SELV DC 0...10 V, max. 5 mA
Control output Y1-N / Y2-N (N.O.) Rating	AC 230 V Max. 5(2) A

Multifunctional inputs	
X1-M/X2-M	
Temperature sensor input	
Type	NTC (3 kΩ at 25 °C)
Temperature range	0...49 °C
Cable length	Max. 80 m
Digital input	
Operating action	Selectable (NO/NC)
Contact sensing	SELV DC 0...3.3 V, max. 1 mA
Parallel connection of several thermostats for one switch	Max. 20 thermostats per switch
Insulation against mains voltage (SELV)	III (4 kV), reinforced insulation

Function input	
External temperature sensor, heating/cooling changeover sensor, window contact, dewpoint sensor, enable electrical heater contact, alarm contact, presence detector, hotel keycard	Selectable X1: P38 X2: P40

Operational data	
Switching differential, adjustable	
Heating (P30)	2 K (0.5...6 K)
Cooling (P31)	1 K (0.5...6 K)
Setpoint setting and range	
Comfort (P08)	21 °C (5...40 °C)
Economy (P11-P12)	15 °C/30 °C (OFF, 5...40 °C)
Protection (P65-P66)	8 °C/OFF (OFF, 5...40 °C)
Multifunctional inputs X1/X2	Selectable (0...11)
Input X1	3 (P38) Window contact (DI)
Input X2	1 (P40) External temperature sensor
Built-in room temperature sensor	
Measuring range	0...49 °C
Accuracy at 25 °C	< ±0.5 K
Temperature calibration range	±5 K
Settings and display resolution	
Setpoints	0.5 °C
Current temperature value displayed	0.5 °C

Environmental conditions	
Storage	IEC 60721-3-1
Climatic conditions	Class 1K3
Transport	IEC 60721-3-2
Climatic conditions	Class 2K3
Operation	IEC 60721-3-3
Climatic conditions	Class 3K5 ¹⁾

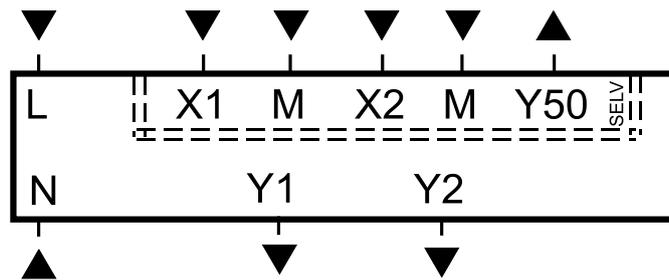
Standards and directives	
EU conformity (CE)	A5W00156993A*
RCM conformity	A5W00156996A*
Protective class	II as per EN 60730-1
Pollution class	Class 2
Degree of protection of housing	IP30 as per EN 60529
Housing flammability class according to UL94	V-0
Environmental compatibility	The product environmental declaration (A5W00139322A *) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

General	
Connection terminals	Solid wires or prepared stranded wires 1 x 0.4...1.5 mm ²
Housing front color	RAL 9003 white
Weight without/with packaging	147.6 g/255.4 g

*) The documents can be downloaded from <http://siemens.com/bt/download>.

¹⁾ No condensation is allowed.

Connection terminals



L, N Operating voltage AC 230 V

Y50 DC 0...10 V fan output

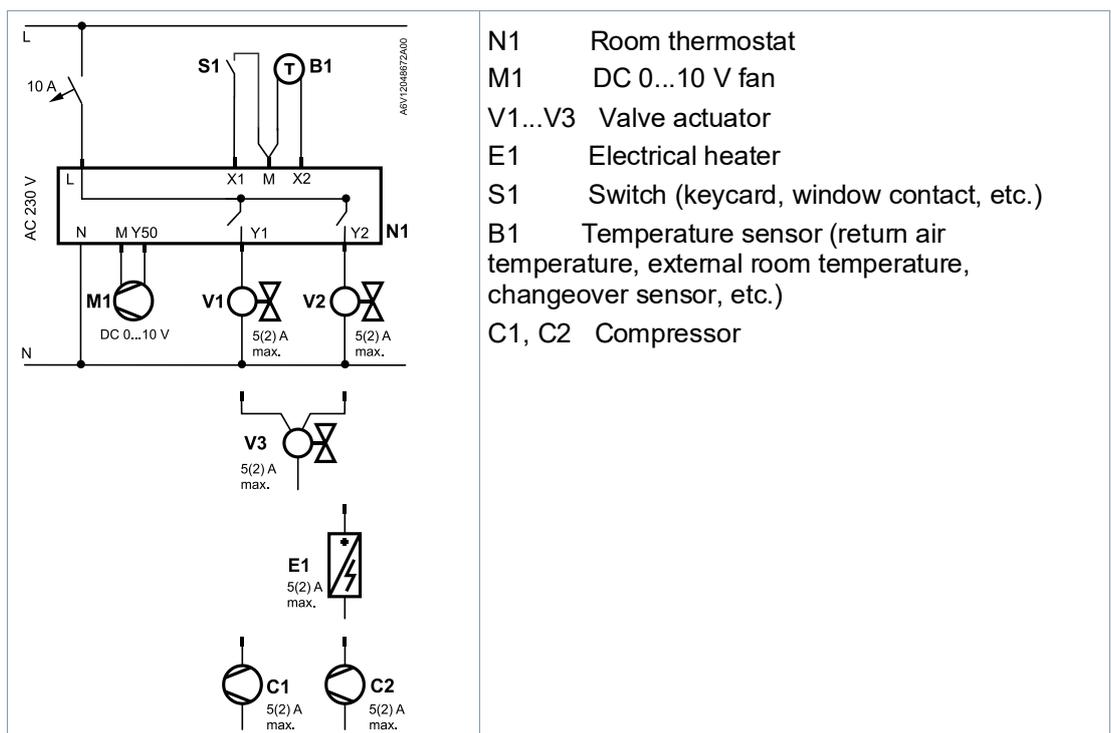
M Reference for DC fan

Y1, Y2 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

Connection diagrams



- N1 Room thermostat
- M1 DC 0...10 V fan
- V1...V3 Valve actuator
- E1 Electrical heater
- S1 Switch (keycard, window contact, etc.)
- B1 Temperature sensor (return air temperature, external room temperature, changeover sensor, etc.)
- C1, C2 Compressor

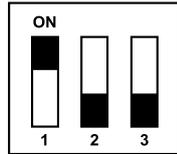
Application examples

The thermostats support the following applications, which can be configured using the DIP switches on the front panel of the unit. Depending on the type, On/Off or modulating control outputs are available.

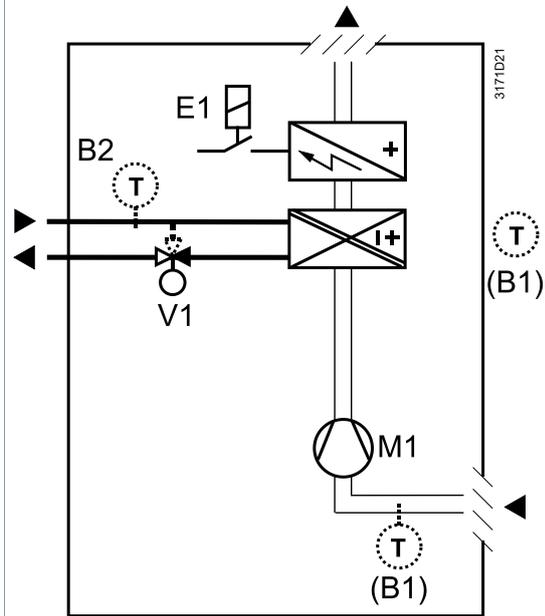
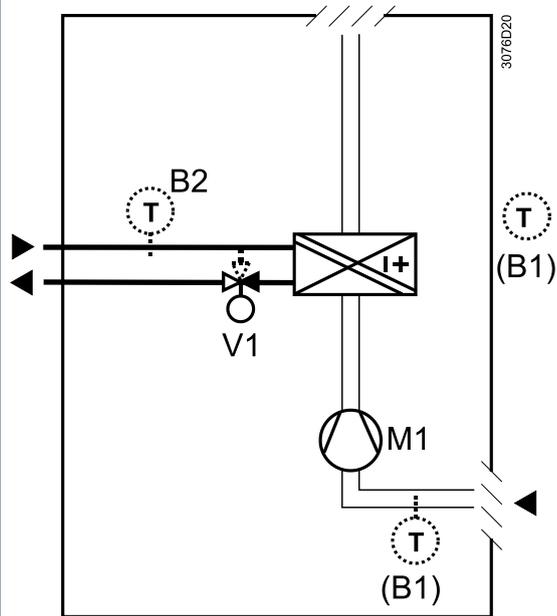
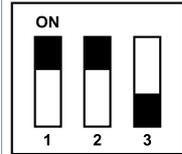
Applications for fan coil systems

Application and output signal, DIP switches, diagram

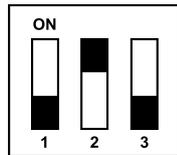
2-pipe fan coil unit On/Off
(heating or cooling)



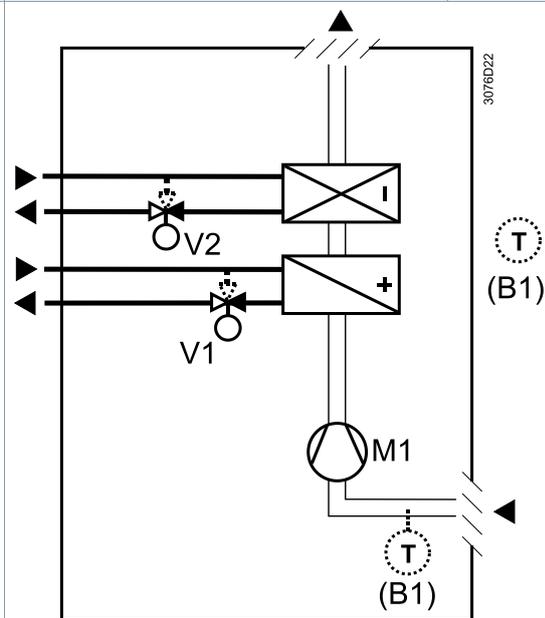
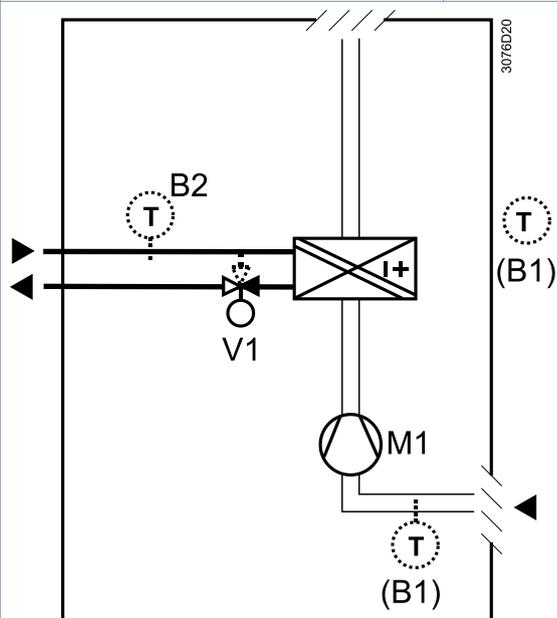
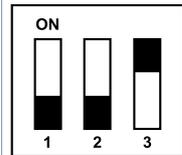
2-pipe fan coil unit with electric heater
(heating or cooling) On/Off



2-pipe fan coil unit
modulating, 3-position
(heating or cooling)



4-pipe fan coil unit On/Off
(heating and cooling)



V1 Heating or heating/cooling valve actuator

B1 Return air temperature sensor or external room temperature sensor (optional)

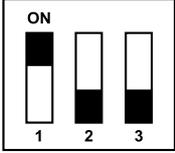
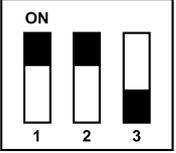
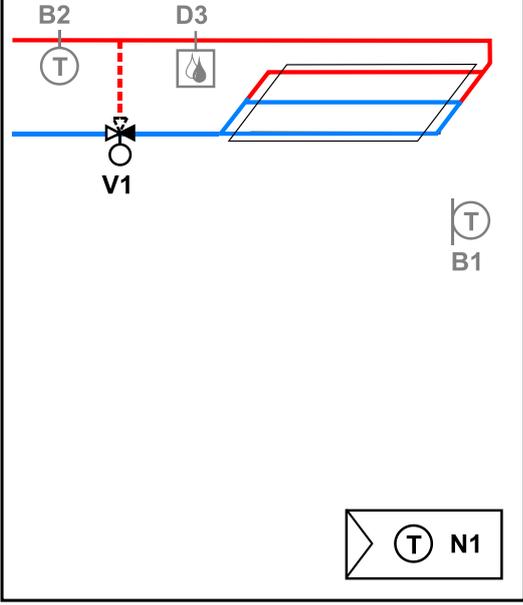
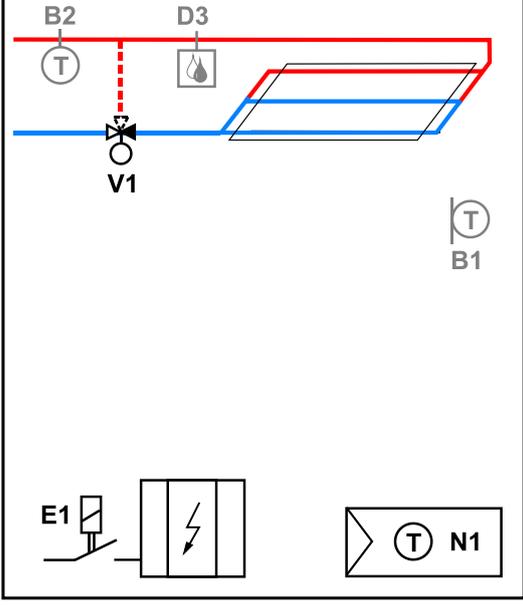
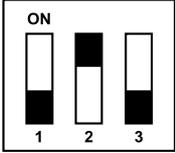
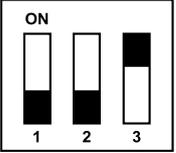
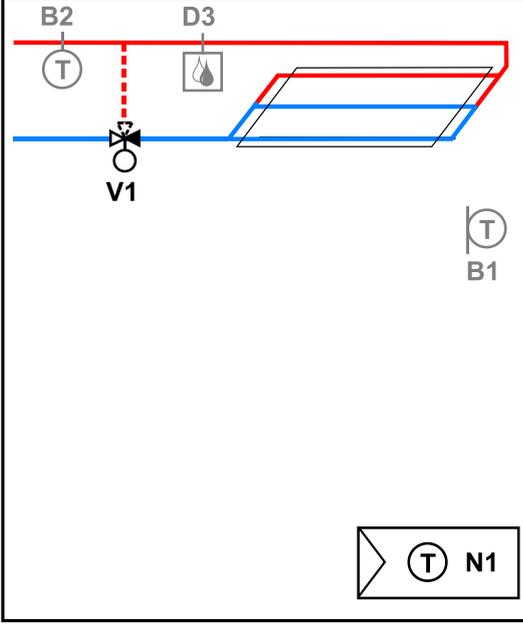
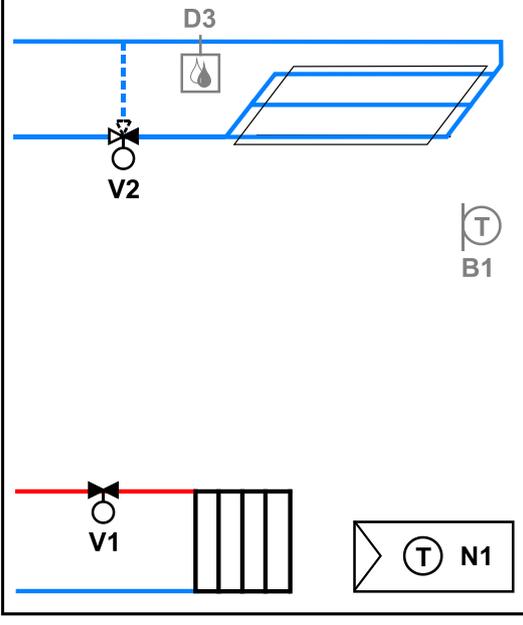
V2 Cooling valve actuator

B2 Changeover sensor (optional)

E1 Electric heater

M1 ECM fan

Applications for universal systems

Application and output signal, DIP switches, diagram	
<p>Chilled/heated ceiling On/Off (heating or cooling)</p> 	<p>Chilled/heated ceiling with electric heater (heating or cooling) On/Off</p> 
 <p style="text-align: right;">3191S11</p>	 <p style="text-align: right;">3191S12</p>
<p>Chilled/heated ceiling modulating, 3-position (heating or cooling)</p> 	<p>Chilled ceiling and radiator On/Off (heating and cooling)</p> 
 <p style="text-align: right;">3191S11</p>	 <p style="text-align: right;">3191S13</p>

V1 Heating or heating/cooling valve actuator

V2 Cooling valve actuator

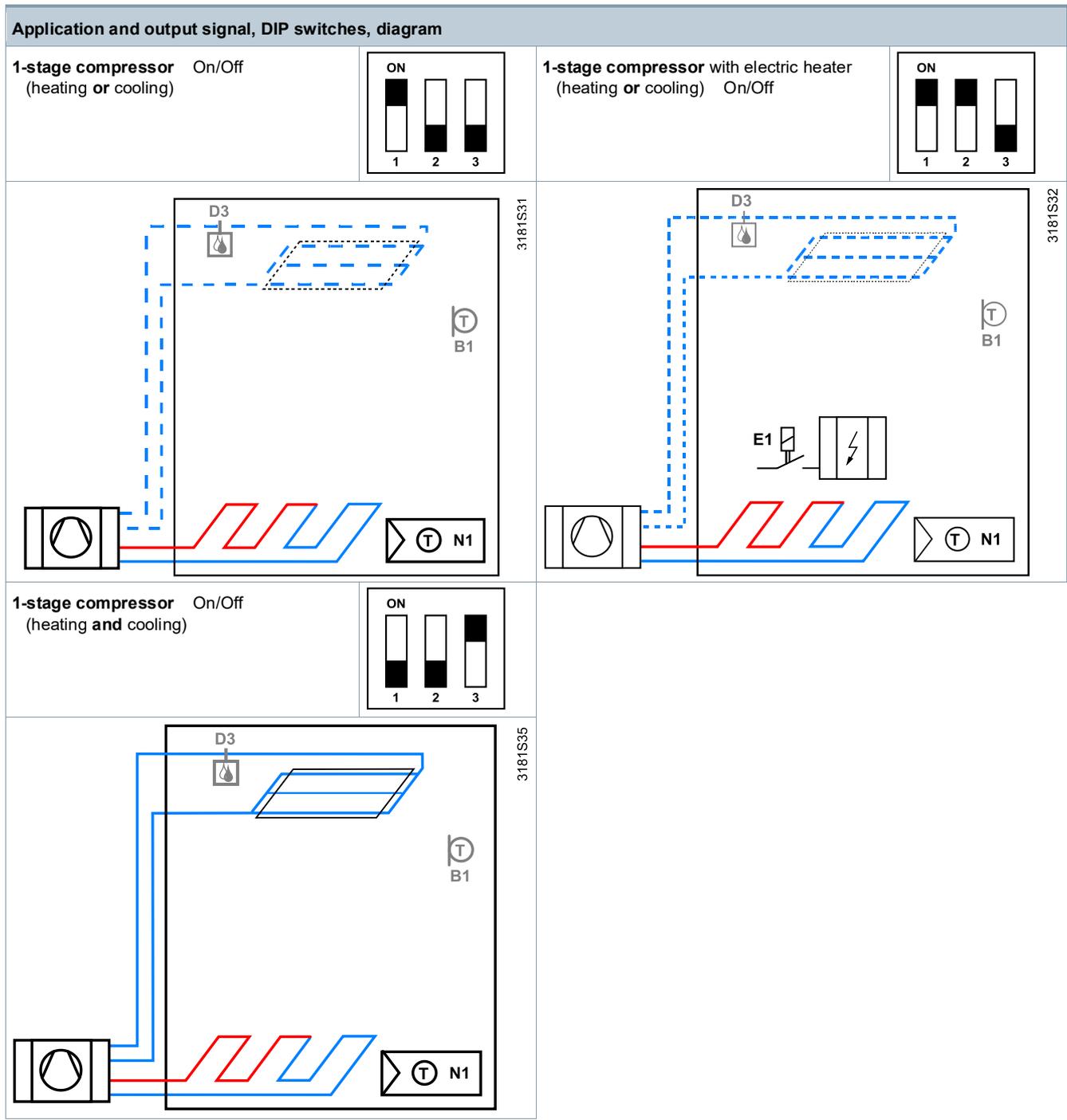
E1 Electric heater

B1 Return air temperature sensor or external room temperature sensor (optional)

B2 Changeover sensor (optional)

D3 Dewpoint sensor

Application for heat pump systems



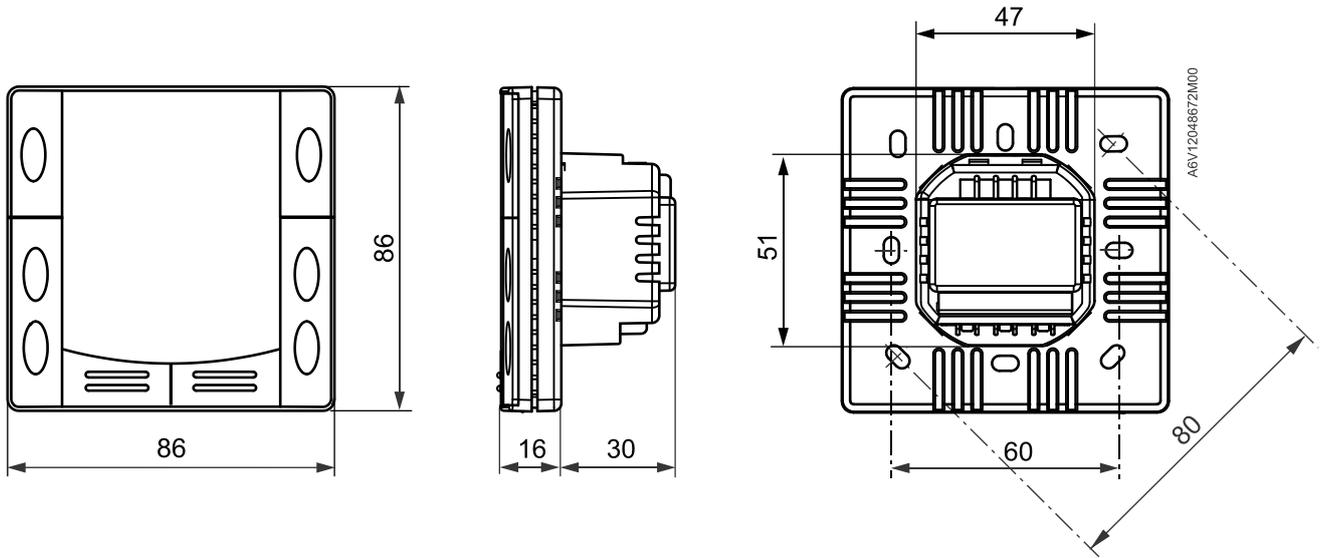
N1 Thermostat
Terminal Y1: Heating (H&C) or Heating/Cooling
Terminal Y2: Cooling (H&C)

E1 Electric heaters

B1 Return air temperature sensor or external room temperature sensor (optional)

D3 Dewpoint sensor

Dimensions



Dimensions in mm

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