Room Thermostats

For four-pipe fan coils

- Room thermostat with manual switch for heating or cooling
- Two-position control
- Manual three-speed fan switch
- Switching voltage AC 24…250 V
- Control output ON/OFF

Use

The room RAB31.. thermostat is used in heating or cooling systems to maintain the selected room temperature.

Typical use:
- Commercial buildings
- Residential buildings
- Light industrial buildings

In conjunction with
- zone valves
- thermal valves
- fans
Functions

Heating
If the room temperature falls below the selected setpoint, the heating contact will close.

Cooling
If the room temperature exceeds the selected setpoint, the cooling contact will close.

Fan speed
There are two possibilities to control the fan speed:

a) Manually by means of the three-speed fan switch on the thermostat for continuous operation

b) Automatically by switching to the selected fan speed via the thermostat for controlled operation. In that case – prior to commissioning – the jumper positions corresponding to the thermostat function must be selected. There are two choices of jumper positions available on printed circuit board:

- SR1 \( \text{SR1} \) \ Selected fan speed as continuous operation
- SR2 \( \text{SR2} \) \ Auto \( \text{Auto} \) \ Fan is switched at the same time as the cooling or heating valve, depending on the switch position.

Ventilation
When the ventilation function is selected (RAB31.1) on the cover by setting the slide switch, the heating and cooling contacts are always open and the fan operates at the selected speed.

Changeover
Heating or cooling is selected with a switch located on the front of the thermostat.

Function diagrams

Type summary

Four-pipe fan coil room thermostat for use with 3-speed fan, manual changeover

RAB31

Four-pipe fan coil room thermostat for use with 3-speed fan, manual changeover and ventilation function

RAB31.1

Equipment combinations

<table>
<thead>
<tr>
<th>Type of unit</th>
<th>Type reference</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motoric on/off actuator</td>
<td>SFA21..</td>
<td>4863</td>
</tr>
<tr>
<td>Thermal actuator (for radiator valve)</td>
<td>STA21..</td>
<td>4893</td>
</tr>
<tr>
<td>Thermal actuator (for small valve 2.5 mm)</td>
<td>STP21..</td>
<td>4878</td>
</tr>
<tr>
<td>Electromotoric actuator for zone valve VVI46 (2 position on / off)</td>
<td>SUA21..</td>
<td>4830</td>
</tr>
</tbody>
</table>

\(^1\) The documents can be downloaded from [http://siemens.com/bt/download](http://siemens.com/bt/download).
### Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Type reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter plate 120 x 120 mm for 4” x 4” conduit boxes</td>
<td>ARG70</td>
</tr>
<tr>
<td>Adapter plate 96 x 120 mm for 2” x 4” conduit boxes</td>
<td>ARG70.1</td>
</tr>
<tr>
<td>Adapter plate for surface wiring 112x130 mm</td>
<td>ARG70.2</td>
</tr>
</tbody>
</table>

### Technical design

Key features of the RAB31.. fan coil room thermostat:
- Two-position control
- Gas-filled diaphragm

### Adjustments

The required temperature can be selected by a setpoint adjuster on the front of thermostat.
The setpoint setting range can be mechanically limited by means of setpoint limiter under the cover.

### Notes

The thermostat should be located where the air temperature can be sensed as accurately as possible, without getting adversely affected by direct solar radiation or other heat or refrigeration sources.
Mounting height is about 1.5 m above the floor.

The unit can be fitted to most commercially available recessed conduit boxes or directly on the wall.
Only authorised personnel may open the unit to perform service.
The unit must be isolated from the mains supply before opening.
When installing the unit, fix the base plate first then hook on the thermostat body and make the electrical connections. Then fit the cover and secure it (also refer to separate mounting instructions).
The thermostat must be mounted on a flat wall.
The local electrical regulations must be complied with.
If there are thermostatic radiator valves in the reference room, set them to their fully open position.

⚠️ **Warning: AC 250 V!**
Warning!
No internal line protection for supply lines to external consumers (Q1, Q2, Q3, Y1, Y2)
Risk of fire and injury due to short-circuits!
- Adapt the line diameters as per local regulations to the rated value of the installed overcurrent protection device.

Maintenance
The room thermostat is maintenance-free.

Mechanical design
The gas bellows is filled with environmentally friendly gas.
The thermostat housing is made of plastic.

Ordering

<table>
<thead>
<tr>
<th>Type (ASN)</th>
<th>Part number (SSN)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAB31</td>
<td>S55770-T229</td>
<td>Room thermostat RAB31</td>
</tr>
<tr>
<td>RAB31.1</td>
<td>S55770-T230</td>
<td>Room thermostat RAB31.1</td>
</tr>
</tbody>
</table>

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 via the channels provided for this purpose
- Comply with all local and currently applicable laws and regulations.

Technical data

Power supply

<table>
<thead>
<tr>
<th>Switching capacity</th>
<th>AC 24…250 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>0.2…6 (2) A</td>
</tr>
<tr>
<td>Current</td>
<td>50 or 60 Hz</td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
</tr>
</tbody>
</table>

No internal fuse
External preliminary protection with max. C 10 A circuit breaker in the supply line required under all circumstances

<table>
<thead>
<tr>
<th>Screw terminals for</th>
<th>2 x 1.5 mm² (min. 0.5 mm²)</th>
</tr>
</thead>
</table>

Operational data

<table>
<thead>
<tr>
<th>Switching differential SD</th>
<th>≤1 K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setpoint setting range</td>
<td>8…30 °C</td>
</tr>
</tbody>
</table>

Environmental conditions

| Operation               | to IEC 60721-3-3 |
| Clastatic conditions    | Class 3K5       |
| Temperature             | 0…+50 °C        |
| Humidity                | <95 % r.h.      |
| Pollution degree        | normal, to EN 60730-1 |
| Transport / storage     | to IEC 60721-3-2 |
| Climatic conditions     | Class 2K3/1K3   |
| Temperature             | -20…+50 °C      |
| Humidity                | <95 % r.h.      |
| Mechanical conditions   | Class 2M2       |

Industry standards

| EU Conformity (CE)       | CE1T3015xx 7 |
| RCM Conformity           | CE1T3561en_C1 7 |
| Safety standard          | II to EN 60730-1 |
| Degree of protection of housing | IP30 to EN 60529 |
The product environmental declaration CE1E3015\(^7\) contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

**Mechanical design**

<table>
<thead>
<tr>
<th>Weight</th>
<th>0.14 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>white, NCS S 0502-G (RAL 9003)</td>
</tr>
</tbody>
</table>

\(^7\) The documents can be downloaded from [http://siemens.com/bt/download](http://siemens.com/bt/download).

### Connections diagram

- **D1**: Zone valve or thermal valve for heating
- **D2**: Zone valve or thermal valve for cooling
- **L**: Switching voltage AC 24...250 V
- **M1**: 3-speed fan
- **N**: Neutral
- **N1**: Room thermostat
- **Q1**: Control output
  - "Fan speed I", AC 250 V
- **Q2**: Control output
  - "Fan speed II", AC 250 V
- **Q3**: Control output
  - "Fan speed III", AC 250 V
- **Y1**: Control output
  - "Valve actuator heating", AC 250 V
- **Y2**: Control output
  - "Valve actuator cooling", AC 250 V

### Dimensions

**Room thermostat**

![Room thermostat dimensions](image)

**Base plate**

![Base plate dimensions](image)

### Remarks

**Heating:**
Because of the unavoidable self heating effects of the electrical current, any loads of more than 3 Amperes connected to the unit can influence the control behavior and temperature accuracy in a negative way.

**Cooling:**
Because of the unavoidable self heating effects of the electrical current, any loads of more than 1 Amperes connected to the unit can influence the control behavior and temperature accuracy in a negative way.