

# EBERLE

Edition C



## Air Conditioning Controls



# Controls for air conditioning

## Introduction

EBERLE manufactures a comprehensive range of electromechanical and electronic temperature controls and different accessories for use in the air conditioning market.

The room thermostat range starts with a simple heating/cooling model with or without manual selector switches and extends to units with fan speed control with manual changeover or with auto-changeover with fixed dead zone. The range also includes electronic thermostats which have auto-changeover with variable dead zone or 4 stage heating/cooling with variable dead zone between each stage.

At the top of the range is the electronic integral control, consisting of control board and power board and with standard features such as restart delay and random start timer for the compressor outputs.

In the case of electronic units the temperature sensor may also be mounted remotely to provide even closer temperature control.

To complete the range of products for the air conditioning market there is a series of delay timers which enable compressor loads to be controlled independently of fan control.

The products shown within this catalogue represent an extensive range to suit most applications. However, the company's policy is one of continuing development and further products are currently under design to meet specific applications.

Therefore, if you have an application which cannot be met with the products illustrated, please contact us for additional information.

## NOTE:

**Colour of housing**

**generally now:**

**RAL 9010 polar white**

# C E R T I F I C A T E

**DQS Deutsche Gesellschaft zur Zertifizierung  
von Managementsystemen mbH**  
Qualitäts- und Umweltgutachter

hereby certifies that the company

**EBERLE**  
**EBERLE Controls GmbH**  
Oedenberger Straße 55 - 65  
90491 Nürnberg

HVAC Products  
Relay Products

A Siebe Group Company

has implemented and maintains a

**quality system.**

A quality audit has verified that  
this quality system fulfills the requirements  
of the following standard:

**DIN EN ISO 9001**  
Issue August 1994

This certificate is valid until	November 15, 1999
Certificate Registration No.	0898 - 03
Frankfurt am Main, Berlin	November 16, 1996

  
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TGA-ZG 81003-01  
TGA-ZG 85-96-00 0

## Statement of Conformity

EBERLE controls are constructed, manufactured and tested according to all relevant VDE-Regulations, VDE-Standards and IEC-Recommendations.



## Our contribution to protecting the environment:

The paper for this catalogue was bleached without using chlorine.

# Contents

## EBERLE air conditioning controls

Brief introduction to the EBERLE range  
of air conditioning products

cover sheet

## Table of contents

page 1

## Application matrix

Suitability of the EBERLE  
air conditioning controls

page 2

## Temperature control technology

A survey of relevant technical data

page 3

## Air conditioning controls

Controls for ventilation systems

page 4-6  
page 18  
page 20,25  
page 34

Controls for fan coil systems

page 6-13  
page 14-17  
page 25  
page 30-33

Controls for compressor-operated  
air conditioners

page 12-13  
page 14-17  
page 19  
page 21-24  
page 30-33

INSTAT 7



Hygrostats

page 26-27  
page 34

## Chilled ceiling thermostat

page 28

## Temperature sensors

page 29

## Accessories

Lockable housing and tamperproof  
cover for wall mounted controls and DIN-rail clip

page 35

Mounting plate for wall mounted controls

page 36

## Design and dimensions

page 37

**If you are not sure which type you should select please advise us of the following details:**

- 1. Wiring diagram and/or circuit diagram of the thermostats required.**
- 2. Functions required.**
  - Number of fan speeds.
  - Manual or auto change-over Heat/Cool (Summer/Winter).
  - Compressor start delay.
  - Fan control-continuous or by thermostat.
  - LED Indicators i.e. On, Heat, Cool, etc.
  - Remote sensor facility.
  - Other additional functions.
- 3. Switching load (amps, volts, inductive/resistive etc.).**

# Application matrix

Type of Control	Page	Ventilation systems	Fan Coils		Cooling only	Split Units		Self contained units
			2 pipe	4 pipe		Cooling + electric heat	Heatpumps	
RTR 3546/3551/3561	4	•	★					
RTR 6721	5	•	★					
RTR 6731	6	•	•					
RTR 6732	7	★	•					
RTR 6763	8		•					
RTR 7010	9		•					
RTR 7015	10	★	•	★				
RTR 7016	11	★	•	★				
RTR 7019	12		•		•			
RTR 7011	13	★	•	★	•	★		•
RTR 7026	13		•		•			•
RTR 7004	14			•		•		•
RTR 7012	15			•		•		•
RTR 7203/7204	16			•		•		
RTR 7603/7611	17			•		•	•	
SST 6990	18	•						
RTR 7007	19			•		•	•	•
RTR 7201/7202	20	•	★	•				
KLRe 52552	21		★	•	★	•	•	•
RTR 7006	22					★	•	•
RTR 7023	23					•	•	
KLRe 52561	24					★	•	•
KLRe 52555	25	•						
KLRe 52556	25		★	•				
INSTAT 7	26/27	•	•	•	•	•	•	•
Hygrostat 6001	34	•						
Hygrostat 7001	34	•	★	★				
KLRe 527 22	30/31		•	★	★	★	★	
KLRe 527 24	32/33		•	★	★	★	★	



• ... preferred  
★ ... optional

# Some facts about temperature control technology

## 1. Installation

EBERLE thermostats are mainly designed for wall mounting — why?

Unlike many other control manufacturers EBERLE recommends wall mounted thermostats for both heating and air conditioning applications wherever possible. The reason for this is the fact that remote temperature sensing provides a more accurate room temperature compared to single in-built controls.

It is always preferable to sense the ambient temperature in the local environment rather than in the immediate vicinity of the A/C unit.

If it is absolutely necessary to build the control into the A/C we recommend the use of remote sensors or a separated unit with main switching functions incorporated in the A/C which is controlled by a remotely sited user facility.

## 2. Correct installation practice

1. Mounting: avoid draughts, direct heat, sunlight and outside walls. The thermostat is intended to sense average room conditions so try to mount it where it can "feel" a representative still air situation.

Correct height is approx. 5'0" above floor level (1.5 m). Mount the right way up: ventilation slots should be top and bottom, **never** at the sides.

2. Electrical connections.

a) Always connect mains Neutral to the appropriate terminal. Omitting this connection is a common fault and gives rise to complaints of "sluggish" action and long cycling times. Typical correct cycling rate is 5–6 times per hour.

b) Ensure correct polarity in terminals L and load. Reversal of these terminals will result in the accelerator being permanently in circuit which causes sluggish operation (as in [a]) and also a depressed switch point i.e. the thermostat will under-heat by several degrees.

Both the examples quoted above are frequent causes of complaint of discomfort and high fuel bills.

## 3. Break (B.O.R.)

The contact opens with rising and closes with falling temperatures (for "heating").

## 4. Make (M.O.R.)

The contact closes with rising and opens with falling temperatures (for "cooling").

## 5. Changeover

This is a changeover switch between make and break contacts. (Function see 3 and 4 for heating or cooling).

## 6. Heating/cooling/dead zone

The regulator acts like a changeover, i.e. one contact opens as the temperature rises, and the other one closes. Between these two end positions lies the contact free mid position (dead zone).

This contact free mid position is in effect a time lapse stage between the two end positions, and prevents the control jumping straight from cooling to heating (or vice versa).

## 7. Switching temperature differential

a) The switching differential of the controller: This is dependent on the construction of the apparatus.

b) The switching differential of the room: This depends on the behaviour of the entire system i.e. type of heating, positioning of the regulator and the regulator itself, plus room characteristics.

The switching differential mentioned in this catalogue always relates to the thermostat and not to the actual value for the system which varies according to the operating position.

## 8. Thermal feedback (acceleration)

It takes a certain amount of time for the heat from the energy source to be conducted through the air of the room to the regulator. Until the thermostat observes this heat, there is usually a build up of heat, causing a temperature greater than the desired value. This temperature surge can only be avoided if the regulator switches off before it occurs. This is effected by means of a small resistor (thermal feedback resistor) affixed directly ad-

jacent to the thermostat. As soon as the room temperature regulator requires heat, a voltage occurs across this resistor and the thermostat is "deceived" into controlling a room temperature which in fact has not yet been reached, and therefore switches off earlier.

## 9. Acclimatization

The thermostat shall be allowed to acclimatize to the environment for at least 2 hours after installation to ensure that the unit functions accurately.

## 10. °Celsius or Kelvin

Since the final adoption of the system of International Measurement Units (SI) to avoid any further legal units for the measurement of temperature differences, confusion and misunderstandings have arisen with regard to expressing actual temperature and temperature difference.

Unfortunately there are no guide lines on units of measurement for temperature differences laid down in Section 36 of the "Interpretation of the Law Regarding Units of Measurement". However there is a note following Section 36: "Temperature differences should be expressed in Kelvin units, but may also be expressed in degrees Celsius". The Kelvin Unit (K), or if Celsius temperatures are used, the °C, is in the case of temperature differences used in the same manner as one might measure the length of an unit meter, no matter in which direction.

The temperature in Kelvin or °C is measured from zero or from freezing point.

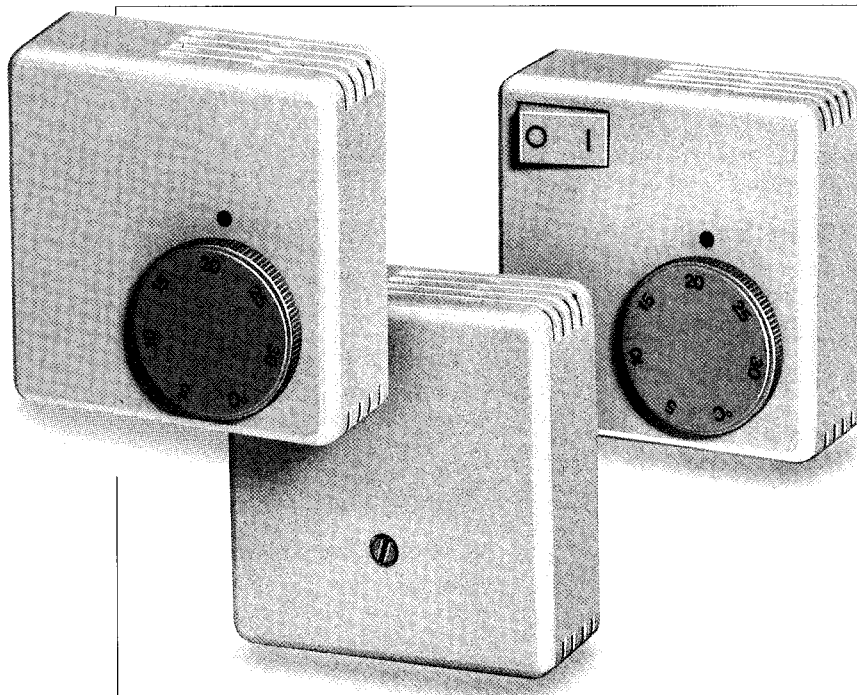
This means:

20°C = 20 K, when it concerns a temperature difference, as one degree Celsius is the same as one Kelvin.

20°C is **not** the same as 20 K when it concerns an actual temperature.

So K is used for temperature difference and °C is used for actual temperature.

# RTR 3551/3561/3546



## Application example:

**RTR 3551, 3561, 3546** are wall mounted room thermostats for **ventilation in cooling mode only**. They are equipped with a SPST make-on-rise contact which closes the electrical circuit if the actual room temperature exceeds the value of the temperature set. All three models have a standard range of 30 to 0°C. Other ranges are available on request.

The series comprises:  
the basic model RTR 3551;  
model RTR 3561 equipped with on/off-switch;  
and model RTR 3546 incorporating tamperproof housing with an internal scale for use in public areas.

## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPST make-on-rise
Temperature range	30 to 0°C
Switching current at 250 V AC	3 (3) A
Switching differential	approx. 0.6 K
Sensor system	bimetal
Features:	
Switch on/off	RTR 3561
Tamperproof housing	RTR 3546

## Order numbers:

17215 3551 106  
17215 3561 106 (switch)  
17215 3546 106 (tamperproof)

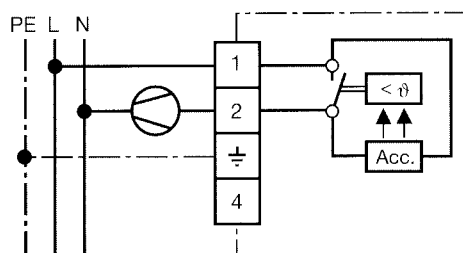
## Dimensions:

Type "Europa"  
(refer to page 37)

## Accessories:

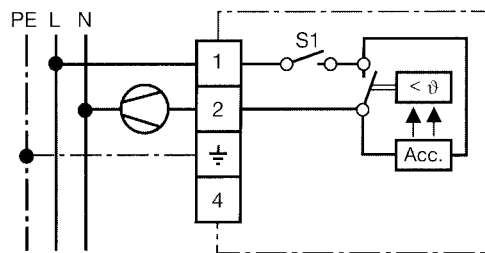
see page 35/36

## Wiring diagram 3551/3546



1 L-supply  
2 Cooling  
⊥ Ground

## Wiring diagram 3561



1 L-supply  
2 Cooling  
⊥ Ground

S1 On/Off

# RTR 6721

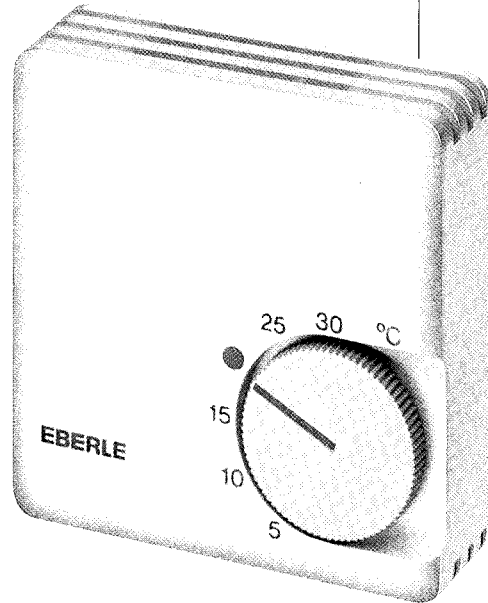
## Application example:

The electromechanical control **RTR 6721** is designed for wall mounting in air conditioning applications.

**RTR 6721** can be used for ventilation in both heating or cooling mode.

Please note:

In order to achieve the specified switching differential, do not forget to connect the thermal acceleration (terminal 4) to the N!



## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration RTR 6721	SPDT
Temperature range	5 to 30 °C
Switching current at 250 V AC	
Heating	10 (4) A
Cooling	5 (2) A
Switching differential	approx. 0.5 K
Sensor system	bimetal

## Order number:

17225 6721 105

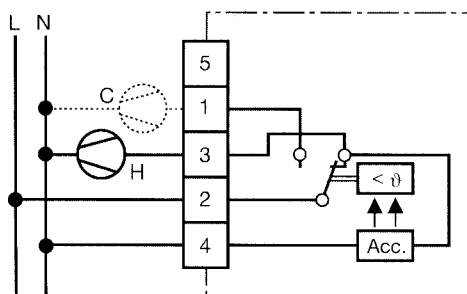
## Dimensions:

1 S (refer to page 37)

## Accessories:

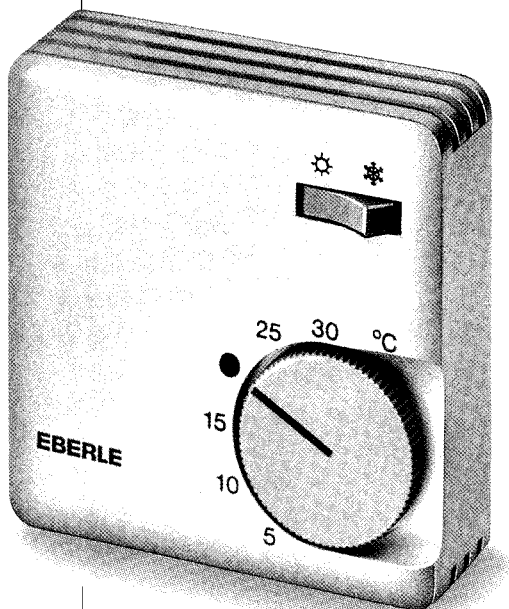
see page 35/36

## Wiring diagram 6721



- 1 Cooling
- 3 Heating
- 2 L-supply
- 4 Neutral

# RTR 6731



## Application example:

**RTR 6731** is a wall mounted room thermostat to operate the fan in **2-pipe FAN COIL systems**.

A heat/cool switch is incorporated to determine the mode of operation.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 4) to the N!

## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30 °C
Switching current at 250 V AC	5 (2) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switch	heat/cool

## Order numbers:

17225 6731 105

## Dimensions:

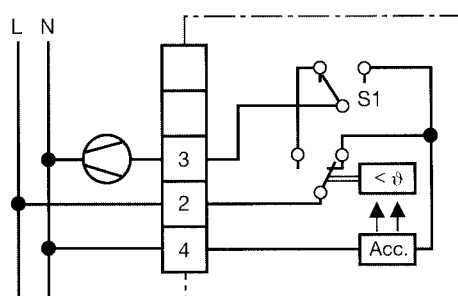
1 S (refer to page 37)

## Accessories:

see page 35/36

## Wiring diagram

- 3 Fan
- 2 L-supply
- 4 Neutral



S1 On/Off



# RTR 6732

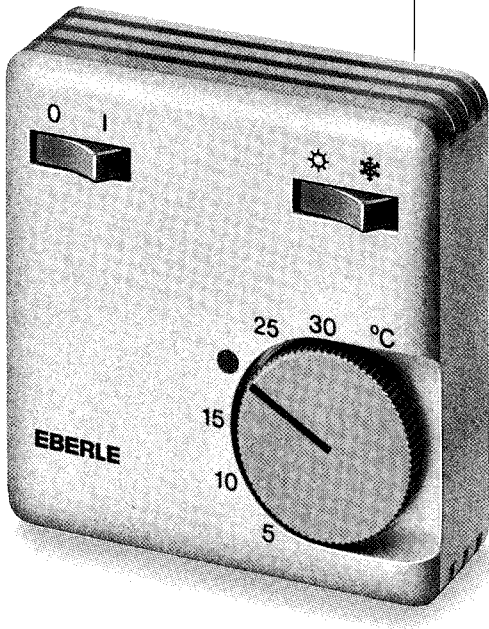
**Application example:**

**RTR 6732** is a wall mounted room thermostat for **2-pipe FAN COIL systems**.

Once switched "ON" the fan runs continuously whereas the thermostat controls the valve.

A heat/cool switch is incorporated to determine the mode of operation.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 4) to the N!



Technical Data	
Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30°C
Switching current at 250 V AC	5 (2) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switches	on/off
	heat/cool

**Order numbers:**

17225 6732 105

**Dimensions:**

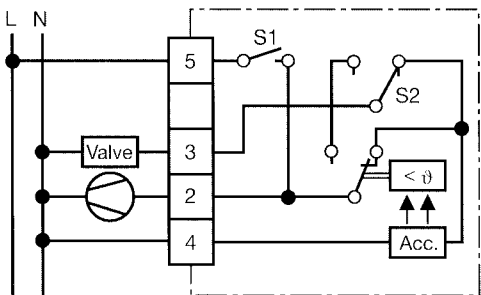
1 S (refer to page 37)

**Accessories:**

see page 35/36

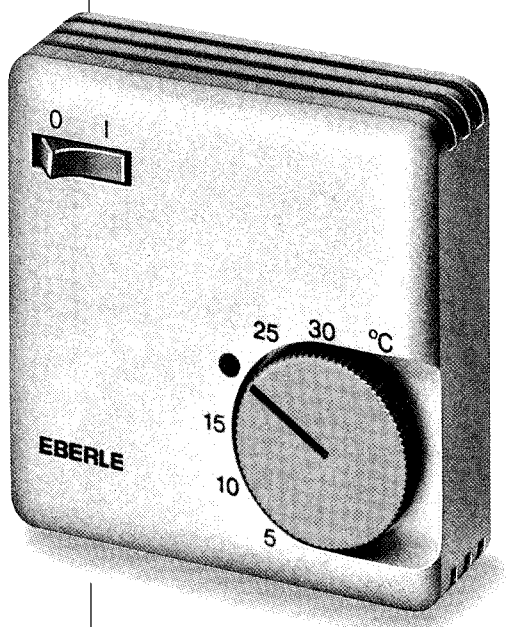
**Wiring diagram**

S1 On/Off  
S2 Heat/Cool



5 L-supply  
3 Valve  
2 Fan  
4 Neutral

# RTR 6763



## Application example:

**RTR 6763** is a wall mounted room thermostat for **2-pipe FAN COIL systems** with **cooling only**.

It is suitable for both water- and refrigerant-filled systems. In chilled water applications the fan runs continuously when switched to the "ON" position while the thermostat system controls the valve. In cooling systems filled with refrigerant the compressor is connected to terminal 2 instead of the fan and the valve is also controlled by the thermostat. Terminal 1 is provided for use with **heating only** applications.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 4) to the N!

## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30°C
Switching current at 250 V AC	
Heating	10 (4) A
Cooling	5 (2) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switch	on/off

## Order number:

17225 6763 105

## Dimensions

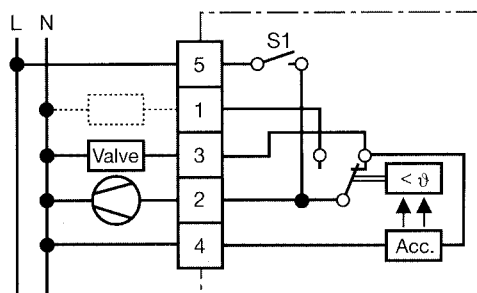
1 S (refer to page 37)

## Accessories

see page 35/36

## Wiring diagram

- 5 L-supply
- 3 Heating
- 1 Cooling
- 2 Fan



S1 On/Off

# RTR 7010

## Application example:

**RTR 7010** is a wall mounted room thermostat designed to operate **2-pipe FAN COIL systems**.

At the time of installation it has to be decided whether

a) the fan is to run continuously once the thermostat has been switched "ON"  
(link terminals 10 and 11)  
or,

b) the fan is to be controlled by the thermostat  
(link terminals 9 and 11)

Fan speed can be set in 3 steps.

For wiring details please refer to the diagram below.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 4) to the N!



## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30°C
Switching current at 250 V AC	6 (3) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switches	on/off
	mode of operation
	fan speed

## Order number:

17225 7010 105

## Dimensions:

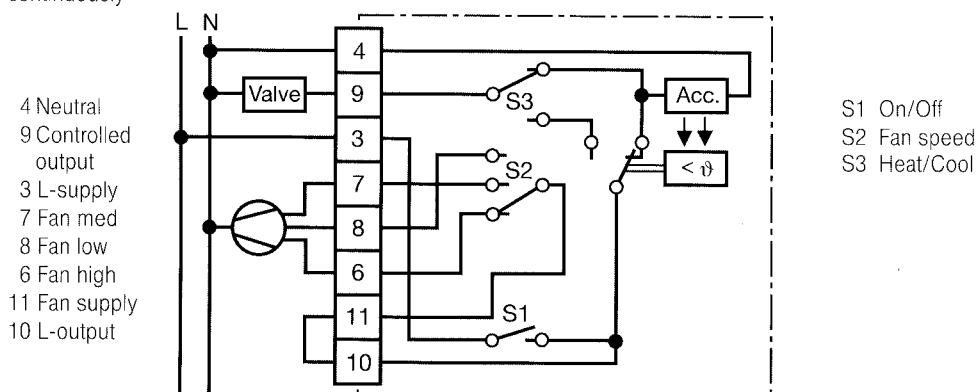
1.7 S (refer to page 37)

## Accessories:

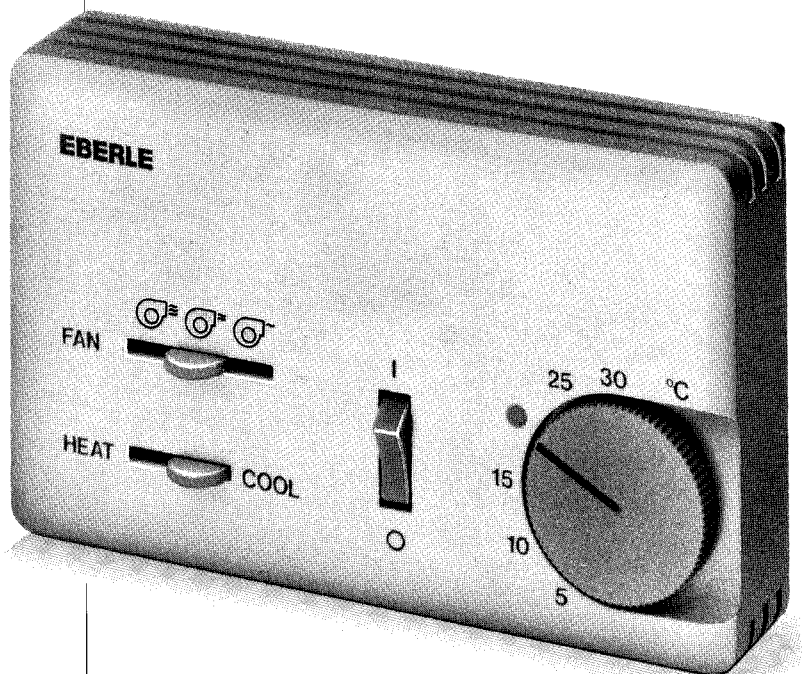
see page 35/36

## Wiring diagram

Example: fan running continuously



# RTR 7015



## Application example:

**RTR 7015** is a wall mounted room thermostat designed to operate the fan in **FAN COIL** units.

After switching "ON" and determining the mode of operation (heating or cooling) the thermostat controls the fan which, in turn, can be set to 3 different speeds.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 5) to the N!

## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30°C
Switching current at 250 V AC	6 (3) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switches	on/off
	mode of operation
	fan speed

## Order number:

17225 7015 105

## Dimensions:

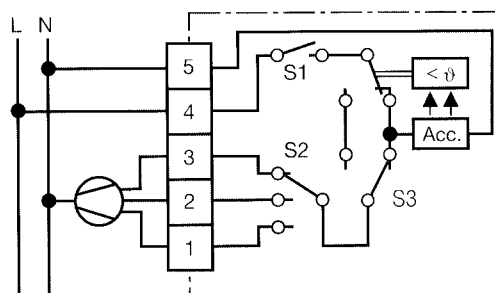
1.7 S (refer to page 37)

## Accessories:

see page 35/36

## Wiring diagram

5 Neutral  
4 L-supply  
3 Fan low  
2 Fan med  
1 Fan high



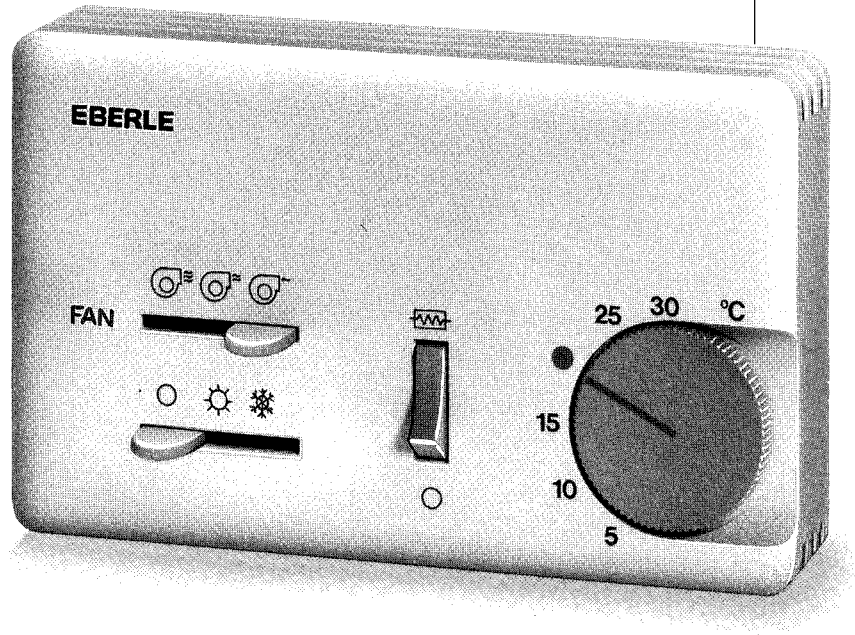
S1 On/Off  
S2 Fan speed  
S3 Heat/Cool

## Application example:

**RTR 7016** is a wall mounted room thermostat to control the fan in either **2-pipe or 4-pipe FAN COIL units**. A switch is provided to operate an auxiliary resistive heater which can be used as a dehumidifier or heating booster. The on/off switch for the thermostat is incorporated in the function slide switch.

If switched "ON" the thermostat controls the fan operation depending on environmental temperature. Fan speed can be set in 3 steps. The resistive heater for dehumidification is to be switched manually.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 1) to the N!



## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30°C
Switching current at 250 V AC	6 (3) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switches	off/heat/cool
	fan speed
	auxiliary heater

## Order number:

17225 7016 105

## Dimensions:

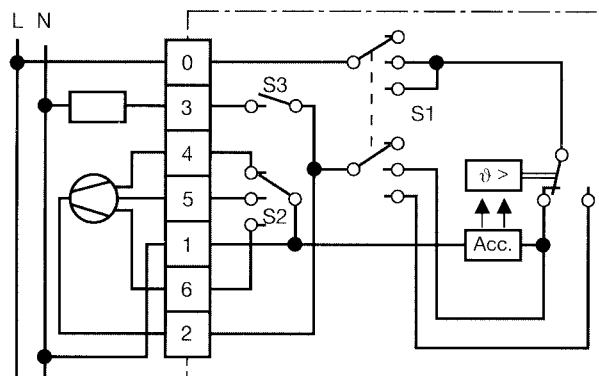
1.7 S (refer to page 37)

## Accessories:

see page 35/36

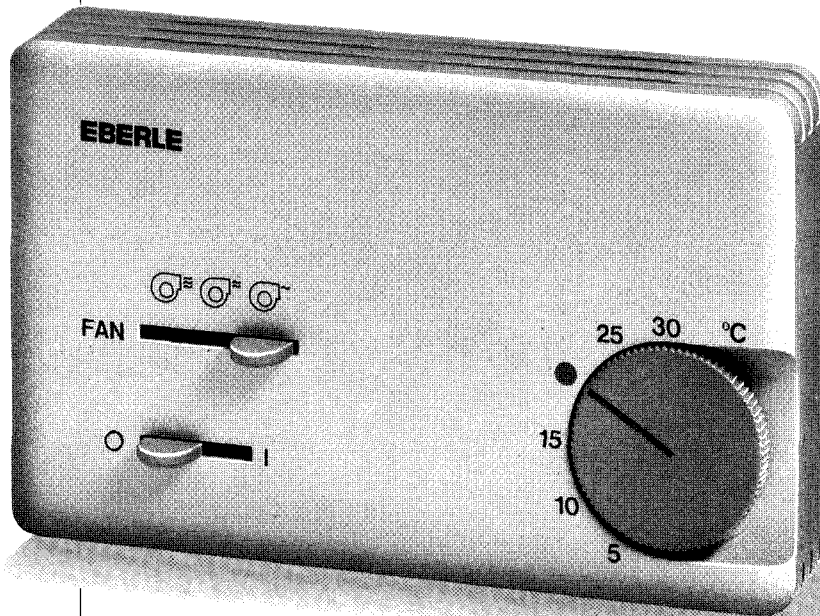
## Wiring diagram

- 0 L-supply
- 3 Auxiliary heater
- 4 Fan low
- 5 Fan med
- 1 Neutral
- 6 Fan high
- 2 Fan supply



- S1 Off/Heat/Cool
- S2 Fan speed
- S3 Aux. heater

# RTR 7019



## Application example:

**RTR 7019** is a wall mounted room thermostat for cooling only and is equipped with an **energy saving** feature. It is designed for use in **2-pipe FAN COIL systems** and **COOLING ONLY SPLIT units**. Designed primarily for installation in hotels and office buildings, where a higher temperature is allowed if the room is not occupied.

The "set-up" signal can be provided by a central timer (offices) or individually by means of switches linked to the key holder board of the reception desk of hotels. Set-up level is approximately 4 K if no voltage (220/240 V) is applied to terminal 1 of the thermostat. Fan speed can be set in 3 steps. For wiring details please refer to the diagram below.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 7) to the N!

## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPST make-on-rise
Temperature range	5 to 30°C
Switching current at 250 V AC	6 (3) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switches	on/off
	fan speed

## Order number:

17225 7019 105

## Dimensions:

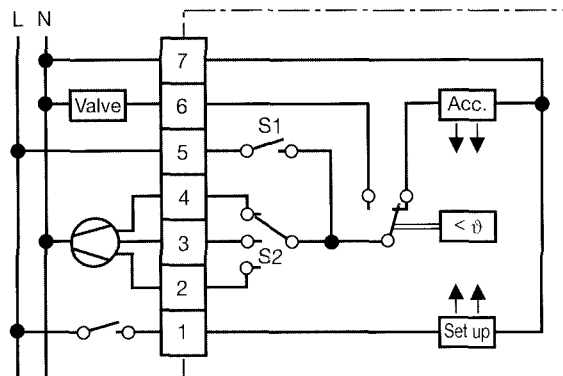
1.7 S (refer to page 37)

## Accessories:

see page 35/36

## Wiring diagram

- 7 Neutral
- 6 Cooling
- 5 L-supply
- 4 Fan low
- 3 Fan med
- 2 Fan high
- 1 External L-supply for influencing set point



- S1 On/Off
- S2 Fan speed

# RTR 7011/7026

## Application example:

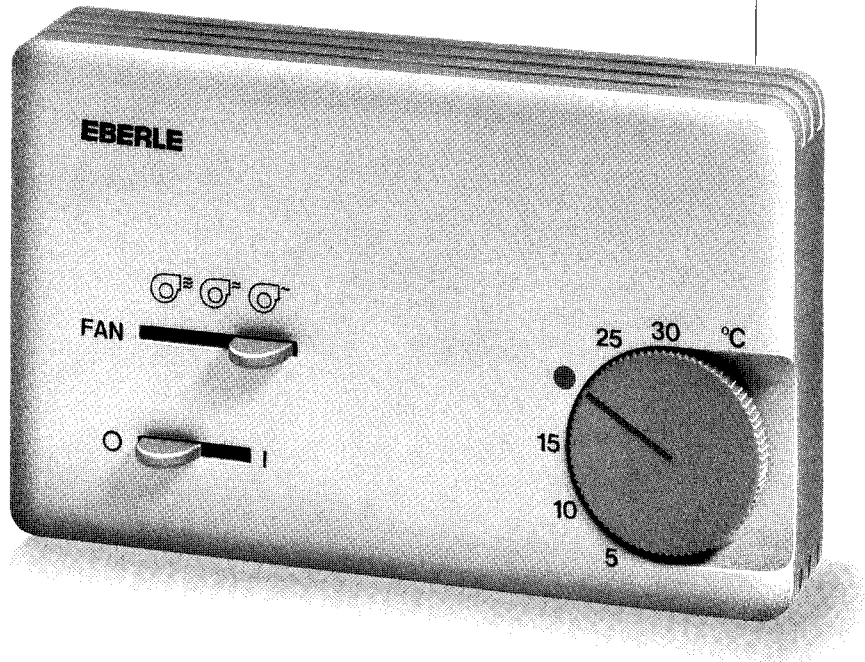
The electromechanical controls **RTR 7011/7026** are designed for wall mounting in air conditioning applications.

Both thermostats allow 3 fan speeds to be controlled within an adjustable temperature range of 5 to 30°C.

**RTR 7011** can be used for both heating and cooling.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 2) of type **RTR 7011** to the N!

**RTR 7026** is designed for cooling only applications. For ease of installation this room control does not require a Neutral connection.



## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration RTR 7011	SPDT
Contact configuration RTR 7026	SPST
Temperature range	5 to 30 °C
Switching current at 250 VAC	6 (3) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switches	on/off
	fan speed

## Order numbers:

17225 7011 105  
17225 7026 105

## Dimensions:

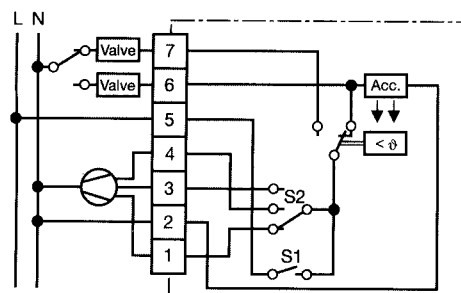
1.7 S (refer to page 37)

## Accessories:

see page 35/36

## Wiring diagram 7011

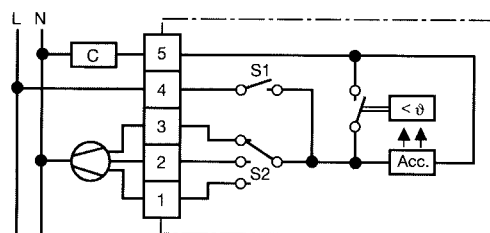
- 7 Cooling
- 6 Heating
- 5 L-supply
- 4 Fan med
- 3 Fan low
- 2 Neutral
- 1 Fan high



S1 On/Off S2 Fan speed

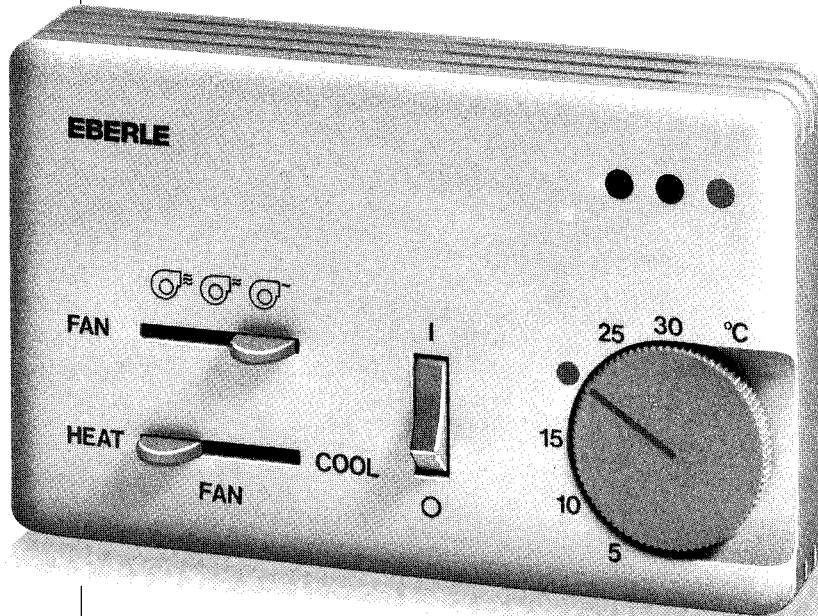
## Wiring diagram 7026

- 5 Cooling
- 4 L-supply
- 3 Fan low
- 2 Fan med
- 1 Fan high





# RTR 7004



## Application example:

**RTR 7004** is a wall mounted room thermostat typically designed for **FAN COIL 4-pipe systems** but also suitable for **SPLIT units without reversing valve**.

This thermostat is equipped with function indicator lamps. When used in FAN COIL applications the valves are controlled by the thermostat, and the mode of operation (heating/ventilation/cooling) is determined by the function switch. The fan is continuously running once the thermostat has been switched "ON" and the speed can be set in 3 steps.

Please note: Do not forget to connect terminal 7 to the N!

## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30°C
Switching current at 250 VAC	6 (3) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switches	on/off
	mode of operation
	fan speed
Lamps	on
	heating operation
	cooling operation

## Order number:

17225 7004 105

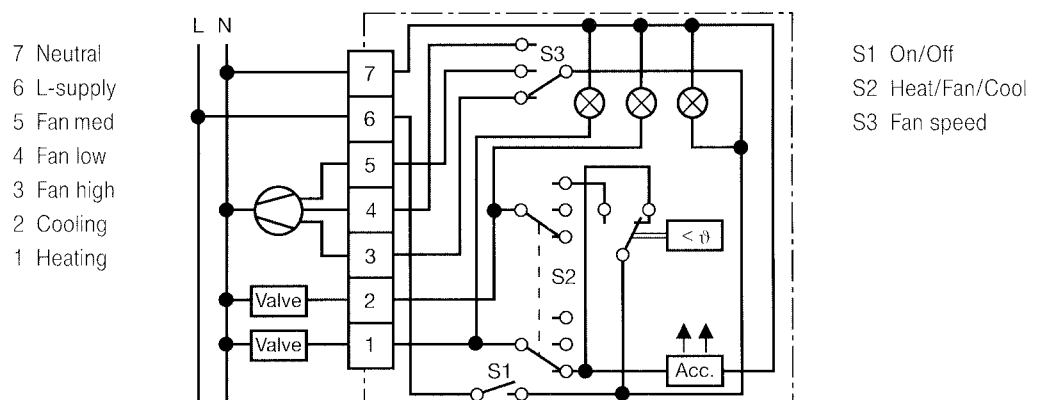
## Dimensions:

1.7 S (refer to page 37)

## Accessories:

see page 35/36

## Wiring diagram





# RTR 7012

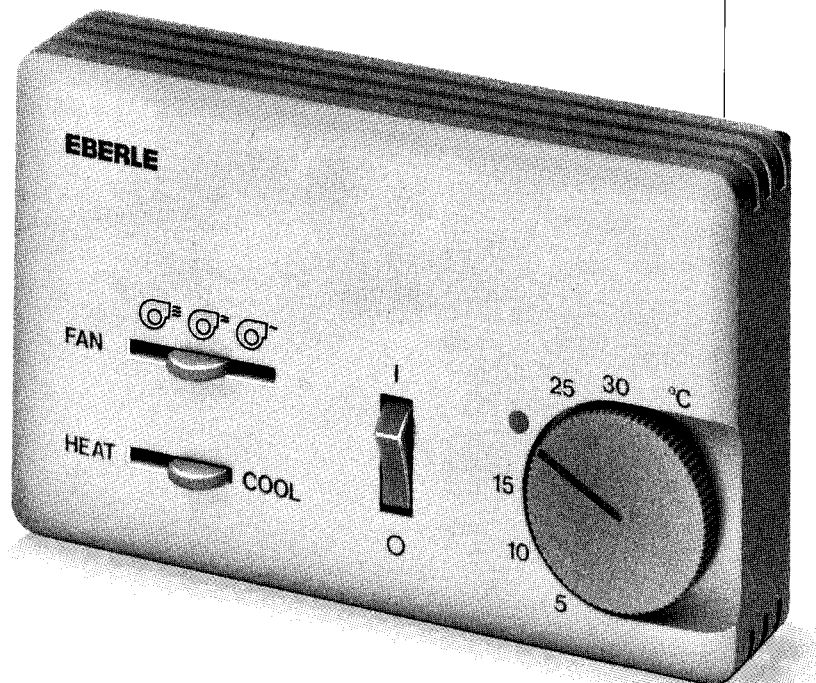
## Application example:

**RTR 7012** is a wall mounted room thermostat typically designed for **FAN COIL 4-pipe systems** but also suitable for **SPLIT units without reversing valve**.

RTR 7012 is similar to RTR 7004 but with no fan-only position (ventilation without cooling or heating) and no function indicator lamps.

For wiring details please refer to the diagram below.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 7) to the N!



## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30 °C
Switching current at 250 V AC	6 (3) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switches	on/off
	mode of operation
	fan speed

## Order number:

17225 7012 105

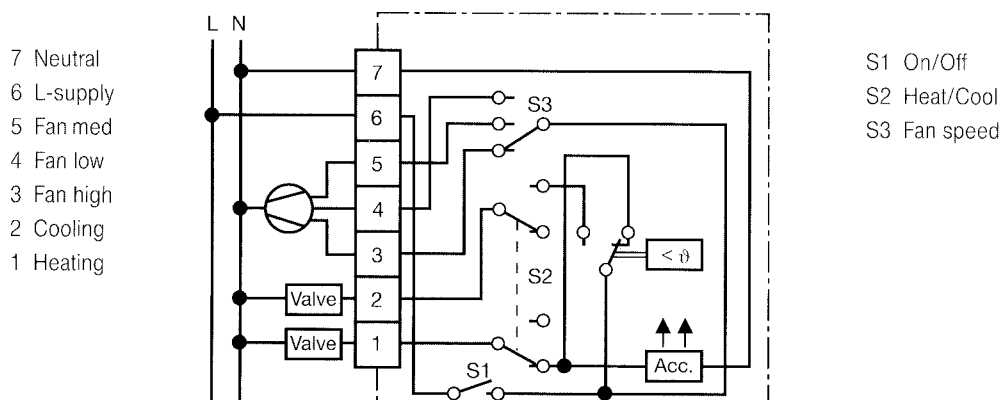
## Dimensions:

1.7 S (refer to page 37)

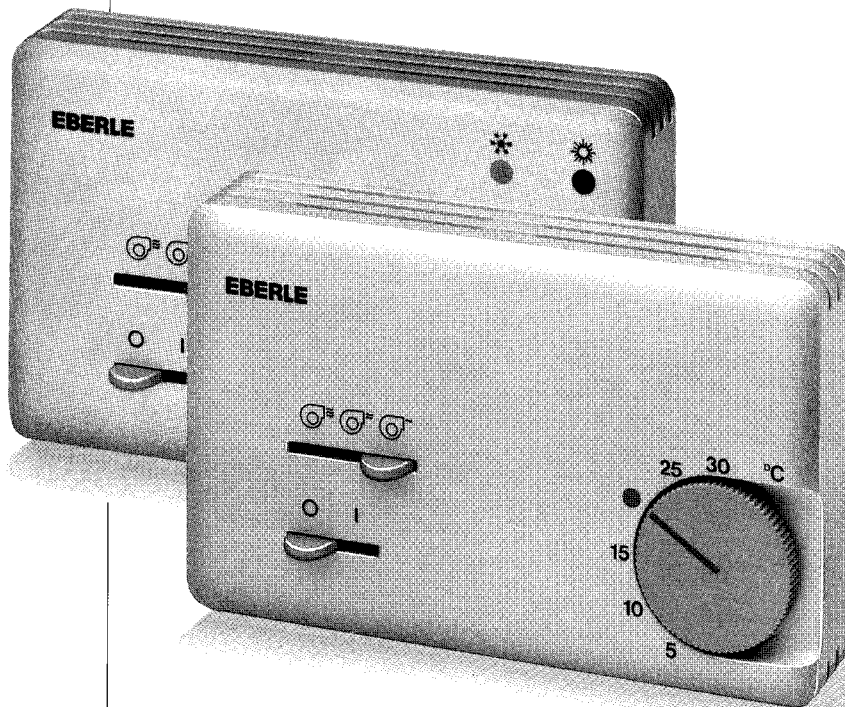
## Accessories:

see page 35/36

## Wiring diagram



# RTR 7203/7204



## Application example:

**RTR 7203/7204** are wall mounted room thermostats with a dead zone between the heating and cooling contacts. With the 3 speed fan switch this enables the thermostat to fully control **4-pipe FAN COILS** and **SPLIT units without reversing valve** by means of the automatic changeover contact. Therefore a manual heat/cool switch is not required.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 1) to the N!

## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT with dead zone
Temperature range	5 to 30 °C
Switching current at 250 V AC	6 (3) A
Switching differential heating	approx. 1.5 K
cooling	approx. 1.8 K
Dead zone tolerance	approx. 1.2 K
Sensor system	bimetal
Switches	on/off
	fan speed
Lamps (RTR 7204)	on
	heating operation
	cooling operation

## Order number:

17225 7203 105  
17225 7204 105 (with lamps)

## Dimensions:

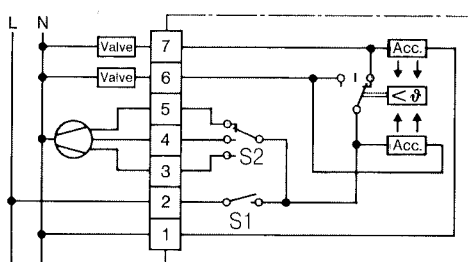
1.7 S (refer to page 37)

## Accessories:

see page 35/36

## Wiring diagram 7203

- 7 Heating
- 6 Cooling
- 5 Fan low
- 4 Fan med
- 3 Fan high
- 2 L-supply
- 1 Neutral

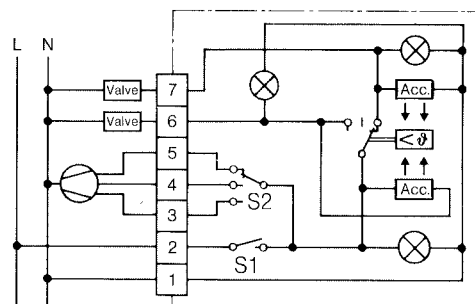


S1 On/Off

S2 Fan speed

## Wiring diagram 7204

- 7 Heating
- 6 Cooling
- 5 Fan low
- 4 Fan med
- 3 Fan high
- 2 L-supply
- 1 Neutral



# RTR 7603/7611

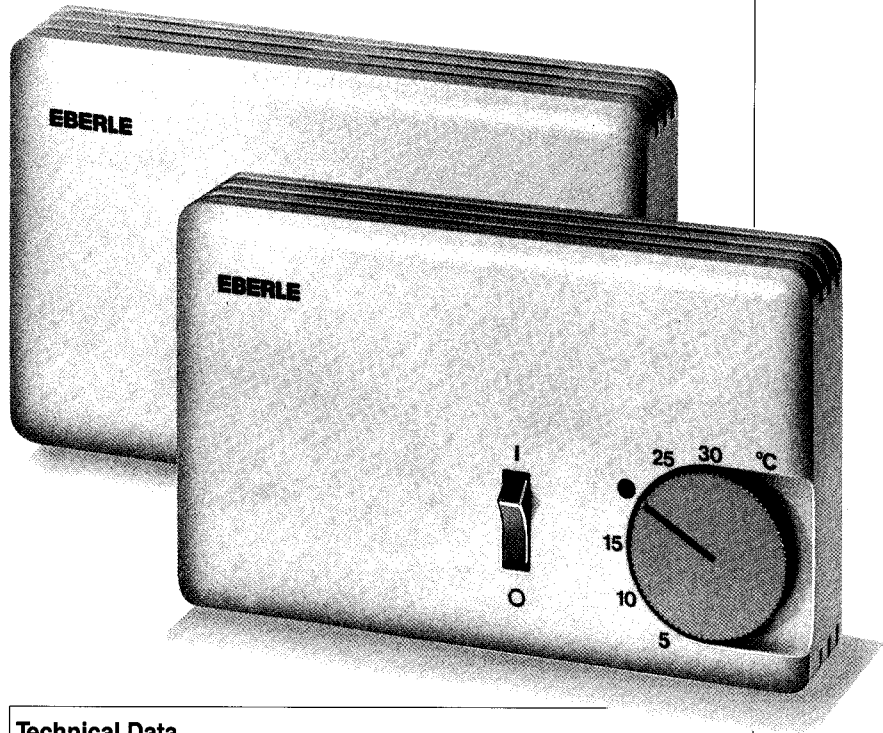
## Application example:

**RTR 7603/7611** are wall mounted room thermostats with **dead zone and an intermediate contact** between heating and cooling terminals. This enables the units to control **SPLIT A/C's with reversing valve (HEAT-PUMPS)** by means of the automatic changeover contact. A manual heat/cool switch is not required. For wiring details please refer to part 1 of the wiring diagrams below. A further application with this type of control is for **SPLIT units (without R/V)** and **FAN COILS (4-pipe systems)** both equipped with a **second heating stage (booster)**.

Boosters for heating are typically resistive direct heaters which will be switched on if the first heating is not sufficient to maintain the room temperature at the desired level.

For wiring details please refer to part 2 of the wiring diagrams below.

Please note: Both thermostats are dual voltage models and can therefore be used in both low and line voltage applications. In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 4) to the N!



## Technical Data

Operating voltage	24 or 220/240 V 50/60 Hz
Contact configuration	SPDT sequential
Temperature range	5 to 30°C
Switching current at 250 VAC	6 (3) A
Switching differential heating	approx. 1.5 K
cooling	approx. 1.8 K
mid contact	approx. 1.2 K
Sensor system	bimetal
Switches (RTR 7611)	on/off

## Order numbers:

17225 7603 105  
17225 7611 105

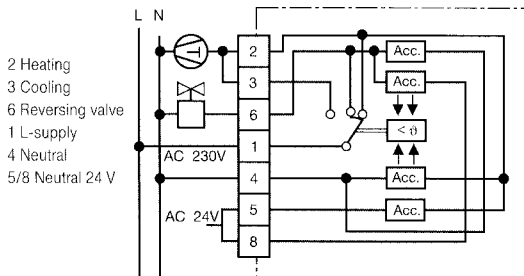
## Dimensions:

1.7 S (refer to page 37)

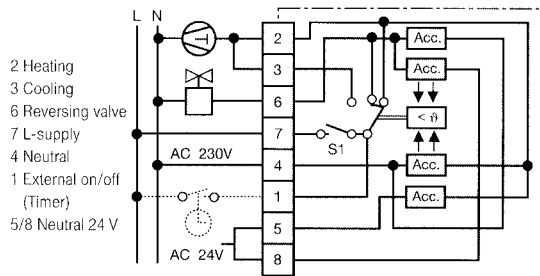
## Accessories:

see page 35/36

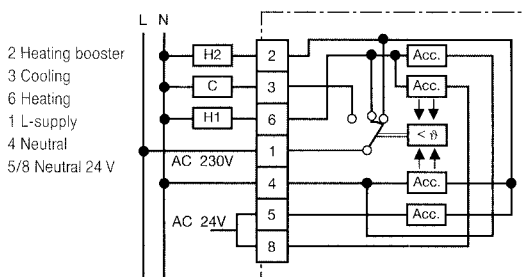
### 1. Wiring diagrams: Heatpump application. RTR 7603



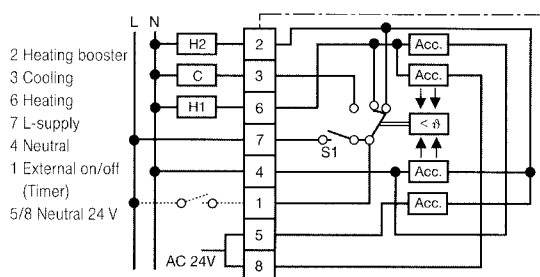
### RTR 7611



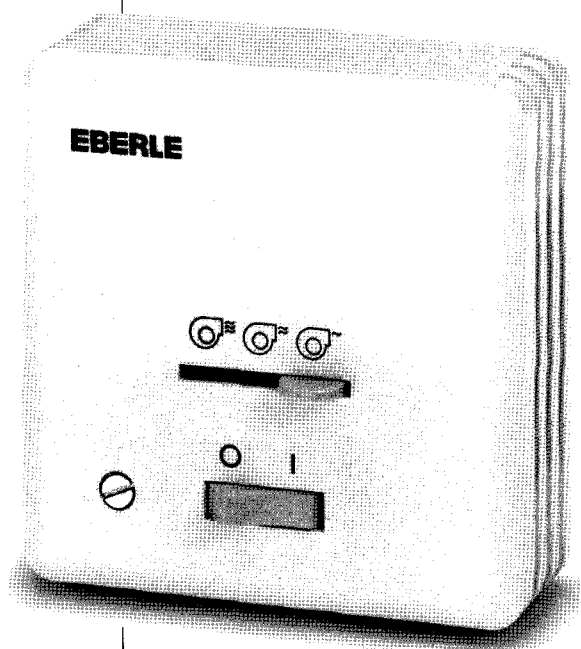
### 2. Wiring diagrams: Dual heating stage application. RTR 7603



### RTR 7611



# Remote control station



For **FAN COIL** operation.  
Type 6990 with switches only

## Technical Data

Switching current at 250 V AC

on/off switch 16 (5) A

fan speed switch 6 (3) A

## Order number:

17225 6990 105

## Dimensions:

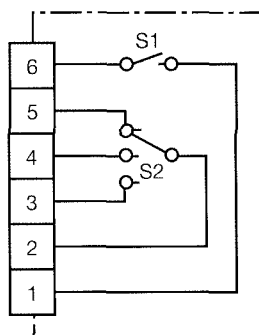
1 S (refer to page 37)

## Accessories:

see page 35/36

## Wiring diagram

6 L-supply  
5 Fan min  
4 Fan med  
3 Fan high  
2 Fan supply  
1 L-output  
S1 On/Off  
S2 Fan speed



# RTR 7007

## Application example:

**RTR 7007** is a wall mounted room thermostat for **universal** application such as **4-pipe FAN COIL systems**, and **SPLIT units**.

For total flexibility this thermostat can operate at both **24 V** and **220 V AC**.

According to individual requirements the fan control switch allows continuous or temperature controlled automatic operation with one fixed fan speed.

Please note: In order to achieve the specified switching differential, do not forget to connect the thermal acceleration (terminal 7 or 6) to the N!



## Technical Data

Operating voltage	24 V or 220/240 V	50/60 Hz
Contact configuration	SPDT	
Temperature range	5 to 30 °C	
Switching current at 250 V AC	6 (3) A	
Switching differential	approx. 0.5 K	
Sensor system	bimetal	
Switches	on/off	
	mode of operation	
	fan control	

## Order number:

17225 7007 105

## Dimensions:

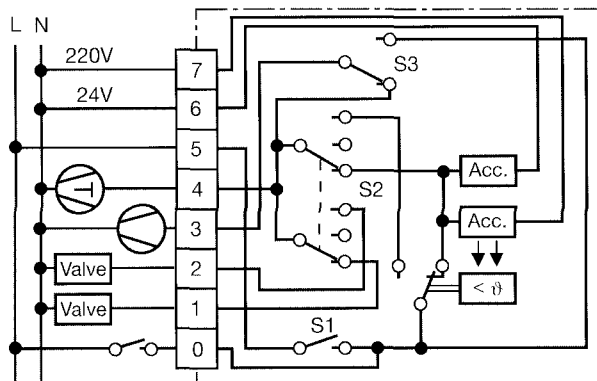
1.7 S (refer to page 37)

## Accessories:

see page 35/36

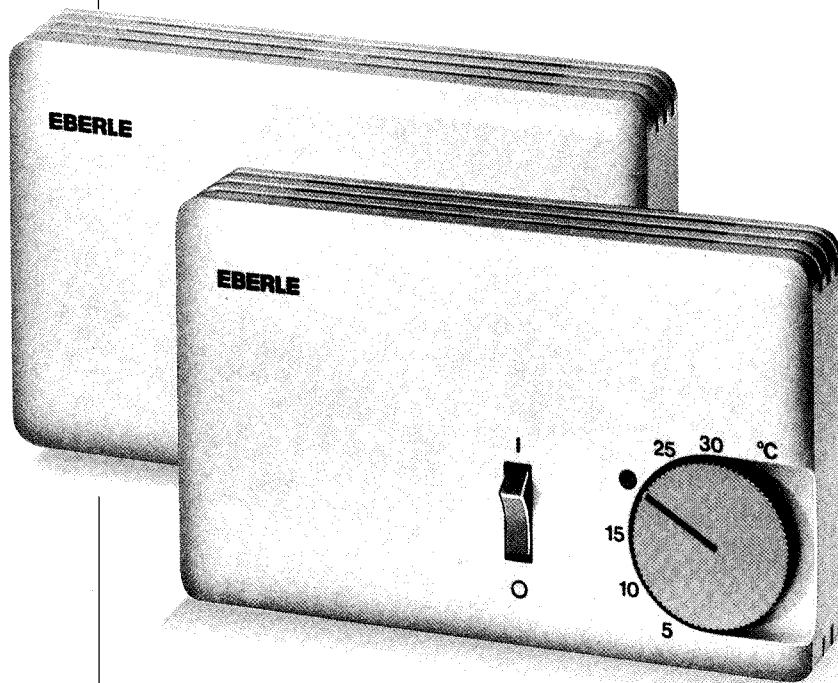
## Wiring diagram

- 7 220 VAC-N
- 6 24 VAC-N
- 5 L-supply
- 4 Compressor
- 3 Fan
- 2 Cooling
- 1 Heating
- 0 External on/off (Timer)



- S1 On/Off
- S2 Heat/Fan/Cool
- S3 Fan mode

# RTR 7201/7202



## Application example:

**RTR 7201/7202** are wall mounted room thermostats with a **dead zone** between the heating and cooling contacts. This enables the units to control air conditioning systems without requiring a manual heat/cool switch.

The 3-point output makes it possible to control fan coils as well as damper motors in ducted systems.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 1) to the N!

## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT with dead zone
Temperature range	5 to 30 °C
Switching current at 250 V AC	6 (3) A
Switching differential heating	approx. 1.5 K
cooling	approx. 1.8 K
Dead zone tolerance	approx. 1.2 K
Sensor system	bimetal
Switches (RTR 7202)	on/off

## Order numbers:

17225 7201 105  
17225 7202 105

## Dimensions:

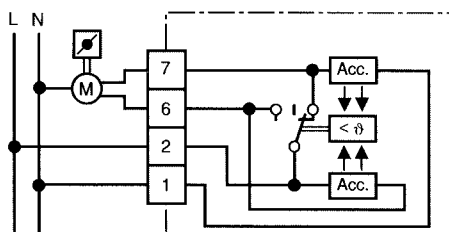
1.7 S (refer to page 37)

## Accessories:

see page 35/36

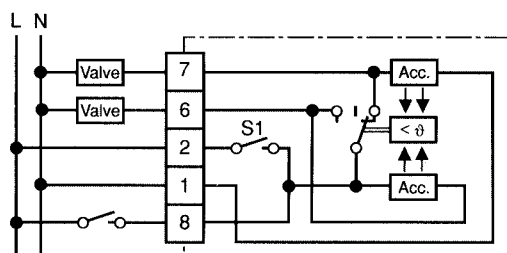
## Wiring diagram 7201

- 7 Heating
- 6 Cooling
- 2 L-supply
- 1 Neutral



## Wiring diagram 7202

- 7 Heating
- 6 Cooling
- 2 L-supply
- 1 Neutral
- 8 External on/off (Timer)



S1 On/Off

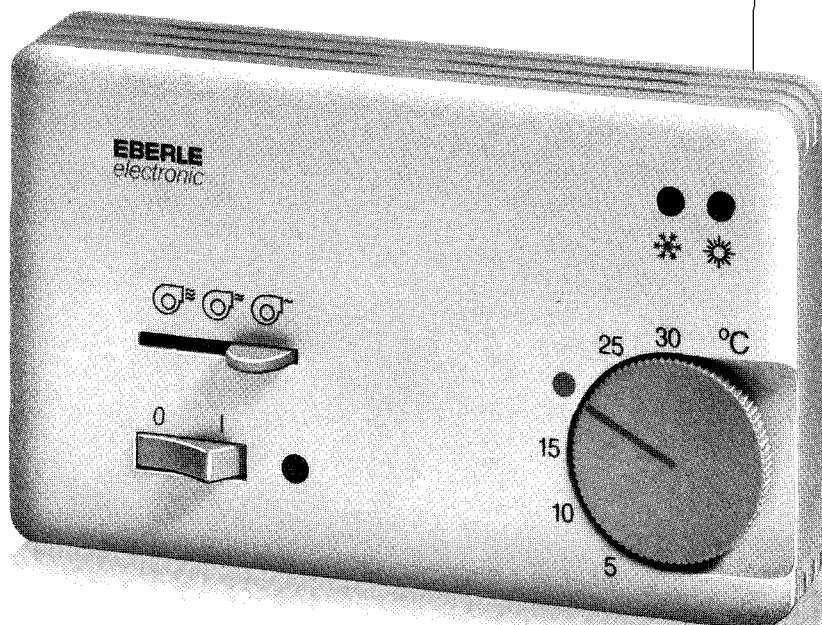
# KLRe 52552

## Application example:

**KLRe 52552** is an electronic wall mounted room thermostat with **dead zone** for universal air conditioning application such as **4-pipe FAN COILS, SPLIT and SELF-CONTAINED units with or without reversing valve (HEATPUMPS).**

The dead zone between the automatic changeover from heating to cooling is variable to satisfy the technical requirements of the different applications.

The fan speed is adjustable in 3 steps. Temperature sensing by incorporated NTC sensor. Remote sensing possible with either cable type or wall housing remote sensors (see page 30).



## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT with adjust. dead zone
Temperature range	5 to 30 °C
Switching current at 250 V AC	
heating	16 (4) A
cooling	10 (4) A
Switching differential	
heating	approx. 0.3 K
cooling	approx. 1.1 K
Dead zone	adjustable 0.5 – 7.5 K
Sensor system	NTC (in housing)
	remote sensor optional/no. 193720
Switches	
	on/off
	fan speed
Lamps (LED's)	
	on
	heating on
	cooling on

## Order numbers:

0525 52 641 960 240 V AC  
0525 52 061 960 24 V AC

## Dimensions:

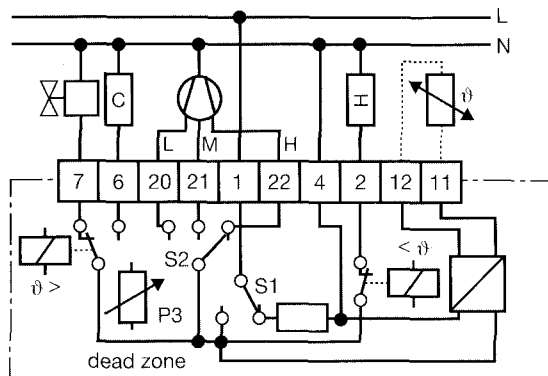
1.7 S (refer to page 37)

## Accessories:

see page 35/36

## Wiring diagram

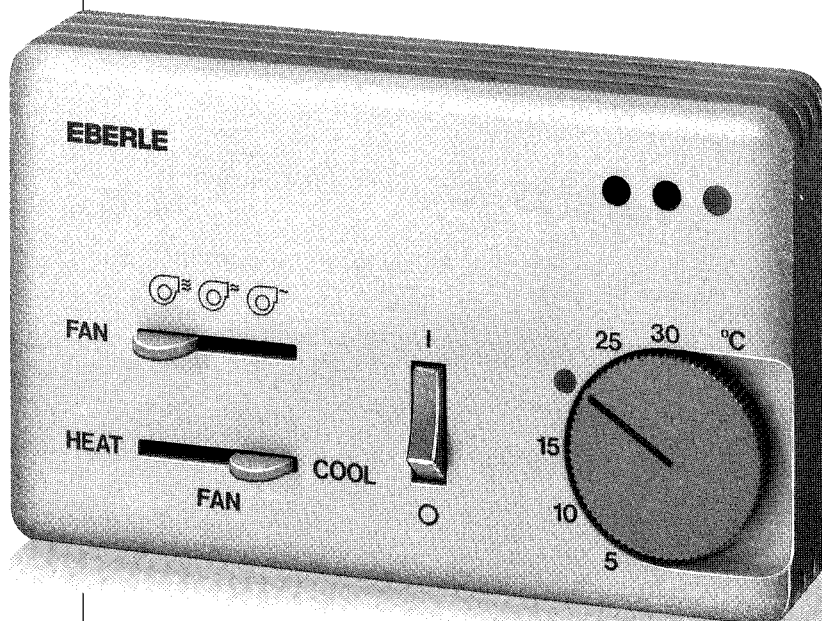
S1 On/Off  
S2 Fan speed



- 7 Reversing valve
- 6 Cooling
- 20 Fan low
- 21 Fan med
- 1 L-supply
- 22 Fan high
- 4 Neutral
- 2 Heating
- 12 Remote sensor
- 11



# RTR 7006



## Application example:

**RTR 7006** is a wall mounted room thermostat designed to control **air conditioners with reversing valve (HEAT-PUMPS)**. It is equipped with function indicator lamps and heat-fan-cool switch for selection of operating mode. Fan speed can be set in 3 steps.

The compressor which is required for both heating and cooling is controlled by the thermostat. The reversing valve is always energized in heating mode.

Please note: In order to achieve the specified switching differential do not forget to connect the thermal acceleration (terminal 7) to the N!

Technical Data	
Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30 °C
Switching current at 250 V AC	6 (3) A
Switching differential	approx. 0.5 K
Sensor system	bimetal
Switches	on/off
	mode of operation
	fan speed
Lamps	on
	compressor on
	valve energized

## Order number:

17225 7006 105

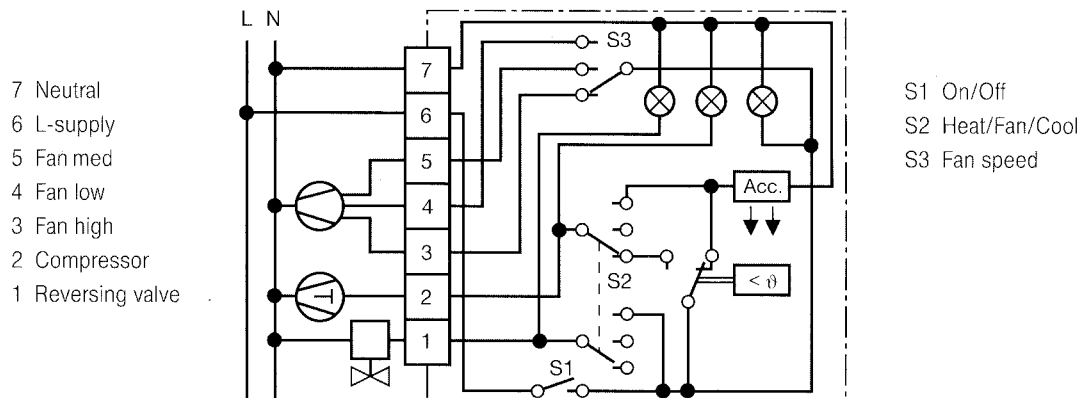
## Dimensions:

1.7 S (refer to page 37)

## Accessories:

see page 35/36

## Wiring diagram





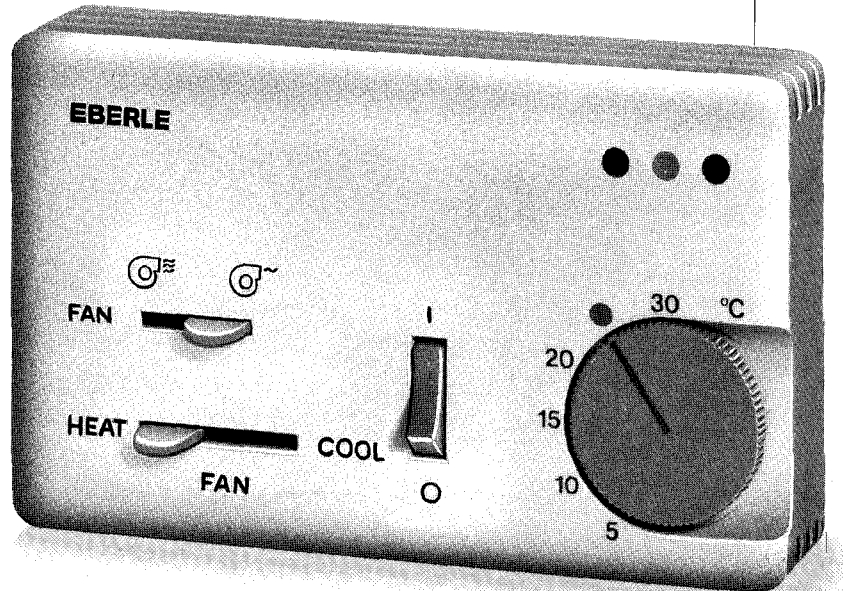
## Application example:

**RTR 7023** is a wall mounted room thermostat designed for **air conditioning units with reversing valve (HEATPUMPS)**.

Lamps indicate the current mode of operation, which can be either heating, cooling or ventilation. Fan speed can be set in 2 steps.

The compressor which is required for both heating and cooling is controlled by the thermostat. The reversing valve is always energized in heating mode. The switching differential has intentionally been extended to prevent the compressor from restarting too frequently.

For total flexibility the thermostat provides two controlled outputs for both heating and cooling which, depending on the mode of operation, allow supplementary slave units to be controlled.



## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	SPDT
Temperature range	5 to 30 °C
Switching current at 250 V AC	6 (3) A
Switching differential	
heating	approx. 1 K
cooling	approx. 2 K
Sensor system	bimetal
Switches	on/off
	mode of operation
	fan speed
Lamps	on
	compressor on
	valve energized

## Order number:

17225 7023 105

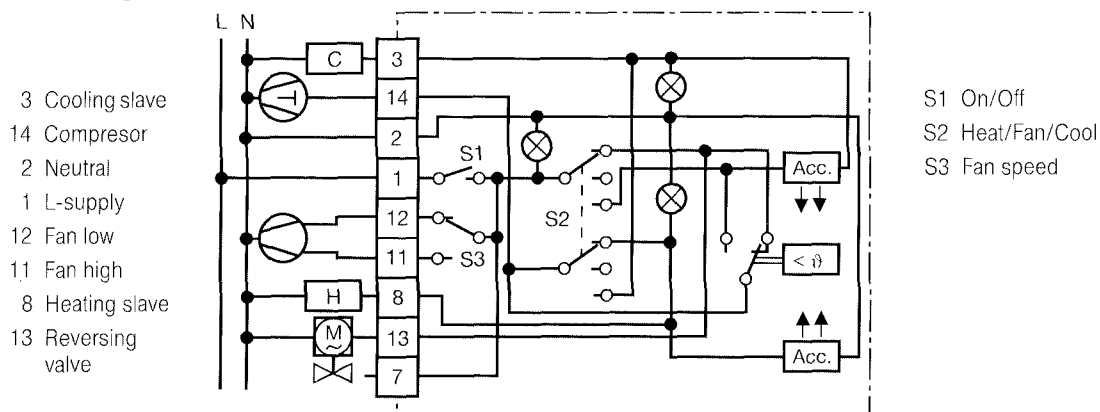
## Dimensions:

1.7 S (refer to page 37)

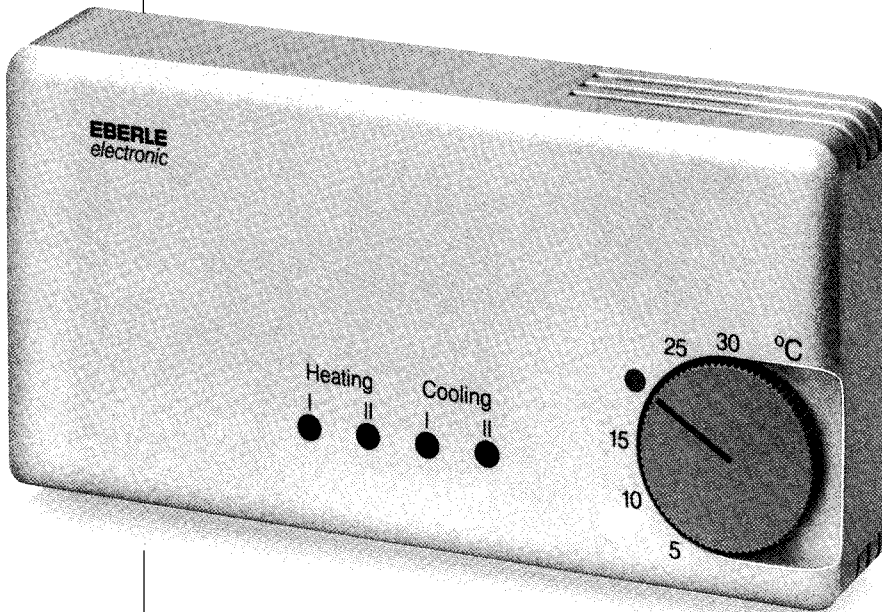
## Accessories:

see page 35/36

## Wiring diagram



# KLRe 52561



## Application example:

**KLRe 52561** is a **multistage A/C-thermostat** for wall mounting designed for fully electronic control of **CENTRAL air conditioning**.

The standard model is equipped with 4 independent changeover relay outputs for two stage heating and two stage cooling.

Also available are a version with on/off switch (2 cool/2 heat) and a model with 3 heating stages and only one cooling stage.

Depending on the difference between set temperature and actual room temperature the KLRe 52561 automatically activates the heating and cooling stages.

Temperature sensing by incorporated NTC sensor. Remote sensing is possible with either cable type or wall housing remote sensors (see page 30). Packing with single unit always includes the "2 S" mounting plate to fit almost all conduit boxes throughout the world (see page 33).

## Technical Data

Operating voltage	220/240 V 50/60 Hz
Contact configuration	4 SPDT with adjust. dead zones
Temperature range	5 to 30 °C
Switching current at 250 V AC	7 (2) A
Switching differential	
heating	0.4 ± 0.1 K
cooling	0.6 ± 0.1 K
Dead zones between	
the stages	adjustable 1 – 5 K
Sensor system	NTC (in housing)
	remote sensor optional, no. 193720
Lamps	4 LED stage indicators

## Order numbers:

0525 61 641 960  
standard type

0525 61 641 916  
with on/off switch

## Dimensions:

2 S (refer to page 37)

## Accessories:

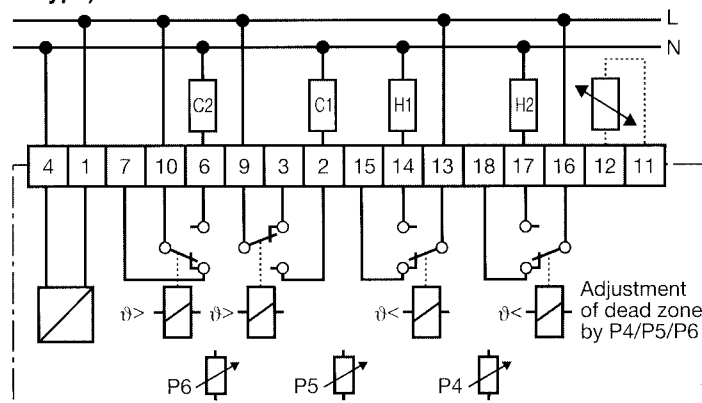
see page 35/36

## Note:

24 V AC on request

## Wiring diagram (standard type)

- 4 Neutral
- 1 L-supply
- 10 L-supply for 2<sup>nd</sup> cooling stage
- 6 2<sup>nd</sup> cooling stage
- 9 L-supply for 1<sup>st</sup> cooling stage
- 2 1<sup>st</sup> cooling stage
- 14 1<sup>st</sup> heating stage
- 13 L-supply for 1<sup>st</sup> heating stage
- 17 2<sup>nd</sup> heating stage
- 16 L-supply for 2<sup>nd</sup> heating stage
- 12 Remote sensor
- 11



Terminals 7, 3, 15 & 18 provide L-output if corresponding stage is de-energized.

# KLRe 525 55/56

## Application example:

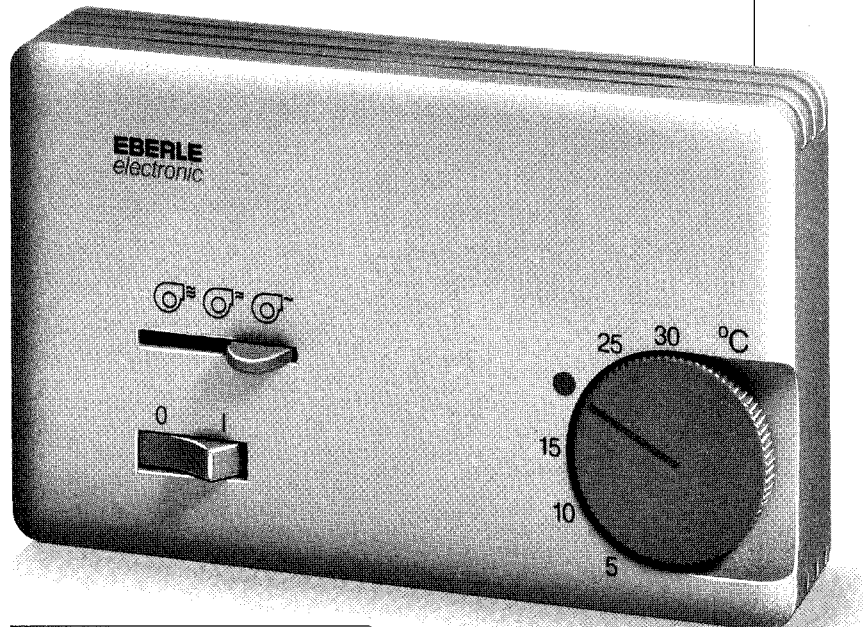
**KLRe 52555 and 525 56** are wall mounted room thermostats with **analogue outputs 0...10 V DC**.

KLRe 52556 is designed for **FAN COIL** operation.

In this application the analogue outputs control the modulated valves for heating and cooling. The fan can be switched separately and fan speed can be set in 3 steps.

KLRe 52555 is basically the same thermostat but without switches.

It can be used to **control damper motors** of air conditioning ducts or to reset the velocity controller in **VAV** applications.



## Technical Data

Operating voltage	24 V (20 to 30 V) 50/60 Hz (FELV)
Fan supply	24 to 240 V (20 to 264 V) 50/60 Hz
Temperature range	5 to 30 °C
Analogue output	0 to 10 V DC;
	modulated for both
	heating and cooling
Load	max. 3 mA
Prop. band	1.5 K fixed
Dead zone	adjustable 0.5 to 7.5 K
Fan output (525 56)	switched phase, 3 speeds
Load	6 (3) A
Sensor system	NTC (in housing), remote sensor optional no. 193720
Switches (525 56)	on/off
	fan speed

## Order numbers:

0 525 55 061 960  
0 525 56 641 960

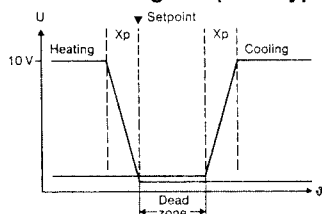
## Dimensions:

1.7 S (refer to page 37)

## Accessories:

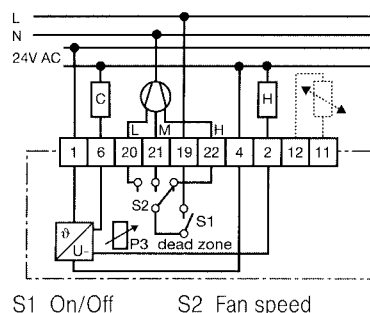
see page 35/36

## Function diagram (both types)



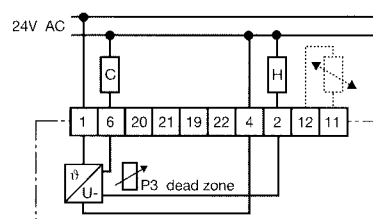
- |               |                  |
|---------------|------------------|
| 1 24 V-supply | 22 Fan high      |
| 6 Cooling     | 4 24 V supply    |
| 20 Fan low    | 2 Heating        |
| 21 Fan med    | 12 Remote sensor |
| 19 Fan supply | 11               |

## Wiring diagram KLRe 525 56

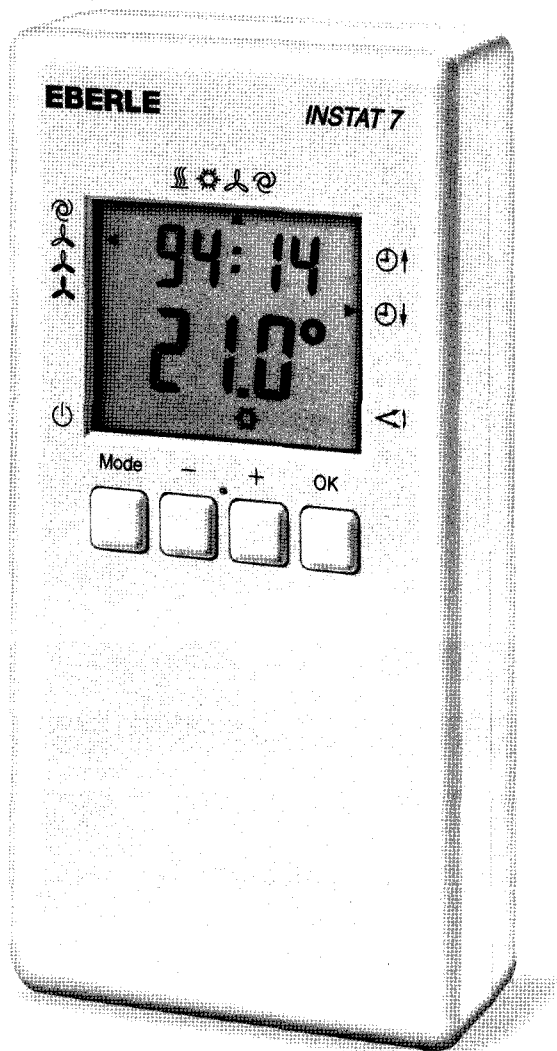


S1 On/Off S2 Fan speed

## Wiring diagram KLRe 525 55



# INSTAT 7



## Applications:

- 2-pipe/4-pipe fan coils
- heat pumps (reversing valve)
- split units
- air conditioning devices with or without electric heating

## Features

- on-off controller
- LCD-display
- permanent display of actual temperature
- programming: 4 buttons (Mode, +, -, OK)
- user guided menu
- output: max. 5 relays
- stand by function
- separate heating and/or cooling
- automatic c/o heating/cooling
- adjustable deadzone
- 3 fan speeds manually
- automatic fan (fan in H/C mode, 3 speeds selected automatically as function of set - temp/actual temp. differential)
- delayed fan off (1 min)
- automatic changeover between internal and external temperature sensor
- permanently safed operating parameters in case of mains failure.

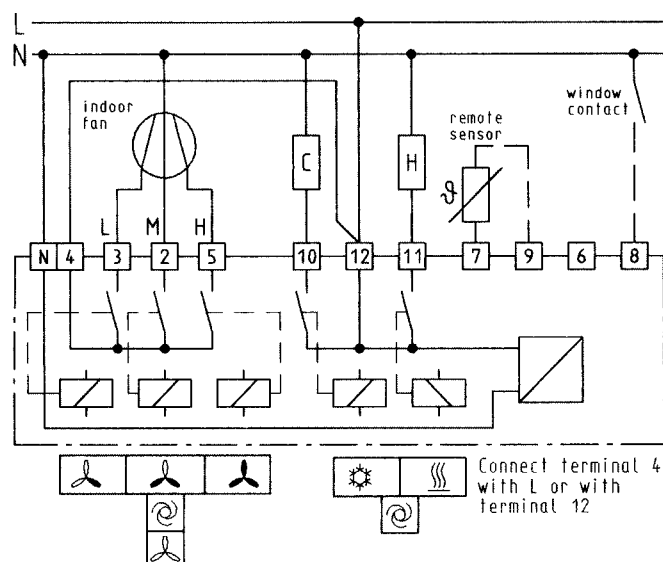
## Options

- 2-stage heating and 2-stage cooling (adjustable deadzone)
- compressor delay after mains failure in operation and in function change mode
- separate output for reverse valve
- defrost function
- electrical supplementary heating for heat pumps
- outdoor temperature control in cooling mode
- remote sensor
- window contact
- air sweep on/off
- ON/OFF timer (10 min. to 99 h 50 min.)
- master/slave function
- hotel-version (limited function)
- single pole mains on/off
- AC 230 V or UC 24 V controller

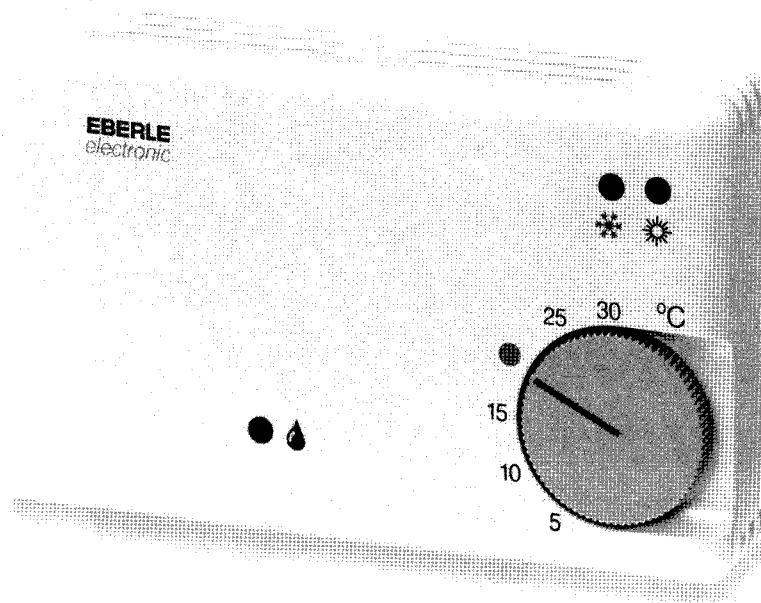
# Technical data

Technical Data	
Product definition	INSTAT 7
EDP-No.	527 3x ...
temperature range	15 to 30 °C 0.5 K resolution
temperature display	0 to 40 °C 0.1 K resolution
storage temperature	-20 to 70 °C
operating voltage	AC 230 V 50 Hz, UC 24 V
power consumption	< 8 VA AC 230 V, < 1 W UC 24 V
temperature sensor	NTC (internally or externally)
timer	resolution 1 Min, precision < 1 Min/Day (20 °C)
	switching resolution 10 Min
relays (max. 5 pcs. according to variant)	5 A cos $\varphi = 1$ ; 2 A cos $\varphi = 0,6$ AC 250 V max. current per L-terminal 10 A
static hysteresis Heating/Ventilation	approx. 1.1 K
Cooling/Ventilation	approx. 1.3 K
deadzone H/C	0 K to 5 K (0.5 K resolution) adjustable
temperature gap H1/H2	0 K to 5 K (0.5 K resolution) adjustable
deadzone C1/C2	0 K to 5 K (0.5 K resolution) adjustable
protection class	IP 40
safety class	II
humidity protection class	no dewing
color of the housing	polarwhite similar to RAL 9010 (RAL 1013 on request)
mounting	wall mounted or on conduit box
dimensions	142 x 71 x 32 mm
weight	175 g

**Wiring diagram** (sample 4-pipe fan coil): Type 52731

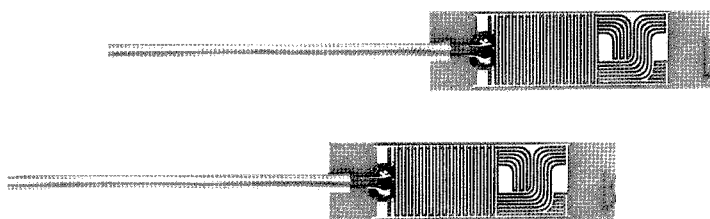


# KDRe 525 58



## Application example:

KDRe 525 58 is designed to control chilled ceiling systems cooling and heating mode. With adjustable dead zone. In case of dewing in cooling mode the device switches off and the drop symbol LED is illuminated. The delivery includes two dew sensors. To optimize control preferably the sensors should be mounted on dew delicate points eg. cold water supply or near windows.



## Dew-sensors

Cable length: 10 m

## Order number:

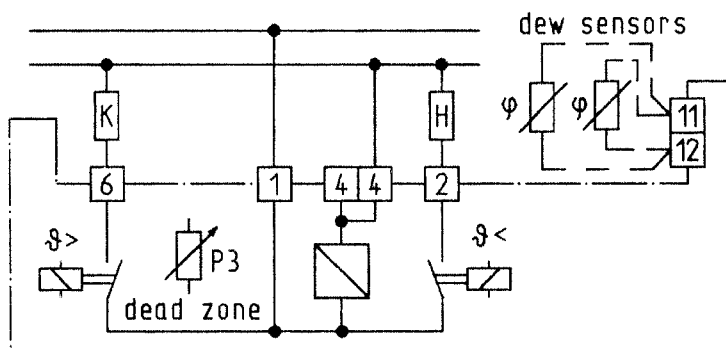
000 193 683 000

## Technical Data

Operating voltage	AC 24 V 50/60 Hz
Contact configuration	cooling 1 SPST, heating 1 SPST
Temperature range	5 °C to 30 °C
Switching current	10 (4) A
Switching differential	cooling approx. 0.4 K, heating approx. 0.4 K
Dead zone	approx. 0.5 K – 7.5 K adjustable
Sensor system	NTC (in housing)
Lamps	heating on
Lamps	cooling on
Lamps	dewing

## Order number:

0525 58 061 960



- 4 Neutral
- 1 L-supply
- 6 cooling
- 2 heating
- 11/12 dew sensor
- P3 dead zone adjusting

# Temperature sensors

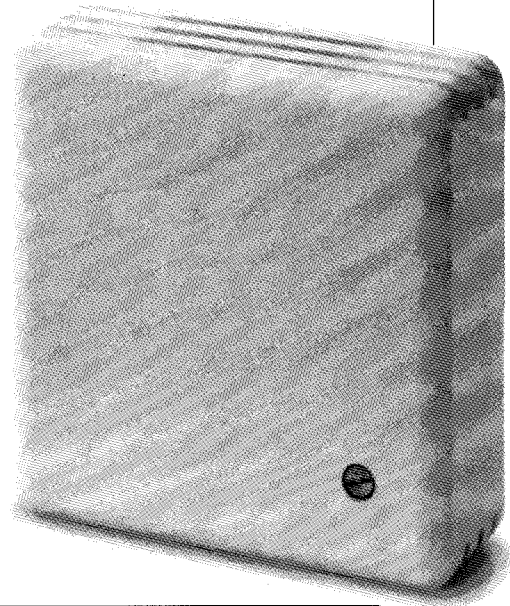
## Application:

Room temperature sensor for wall mounting.

To be used for sensing the temperature remotely from the electronic controller.

Attractive housing ensures unobtrusive appearance.

Sensor is removable from the internal socket and can be exchanged for other sensor types for total flexibility.



## Technical Data

Sensor type	NTC (33 k) with socket
Terminal type	screw terminal
Protection class	IP 30

## Order number:

000 193 572 006 (33 k)

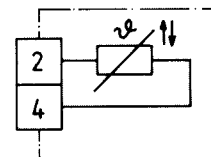
## Dimensions:

1 S (refer to page 37)

## Accessories:

Mounting plate  
(see page 36)

## Wiring diagram



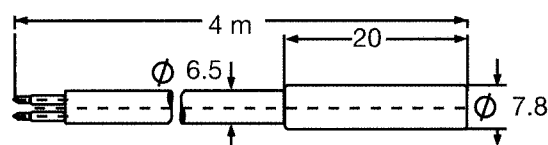
## Remote sensor for A/C controls

cable length: 4 m, material: PVC

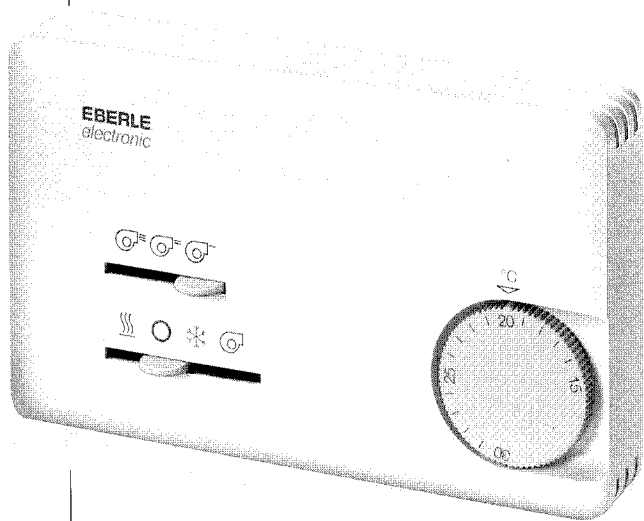
## Order number:

000 193 720 000

Cable can be extended up to max. 50 m using cross section of 1.5 mm<sup>2</sup> without having any influence on set point accuracy. Screened cable should be used if installed near power current cables.



# KLRe 527 22



### Application example:

The air conditioning control 527 22 can be used to control air conditioning devices, e.g. 4-pipe, 2-pipe fan coil, heat pump with reversing valve, etc.

### Accessories:

Remote sensor  
No. 000 193 720 000  
Mounting plate  
No. 007 631 488 005  
see page 35/36

Technical Data	
Operating voltage	230 V ± 5 V 50 Hz
Temperature range	15 to 30 °C
Switching current at 250 V AC	3 (2) A
Max. fan current	6 (3) A
Max. current (Terminal 1)	12 A
Switching differential	0.4 K
Sensor system	NTC (in housing)
	remote sensor optional, no. 193720
Switches	fan speed
	heating/off/cooling/fan
Storage temperature range	-25 ... +65 °C
Max. wire length (Terminal 19)	150 m per unit

### Order number:

0527 22 143 860 = 230 V

### Note:

24 V AC on request

### Wiring diagram 527 22

- 1 L-supply

6 Heating

22 Fan high

21 Fan med

20 Fan low
- 7 Cooling

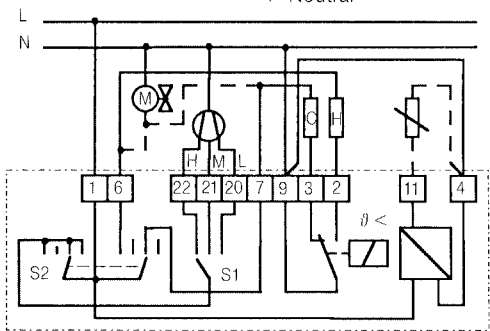
9 Supply for relay

3 Cooling

2 Heating

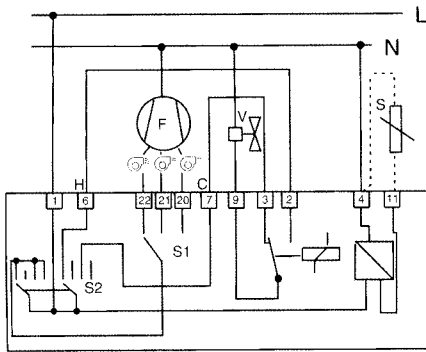
11 Remote sensor

4 Neutral

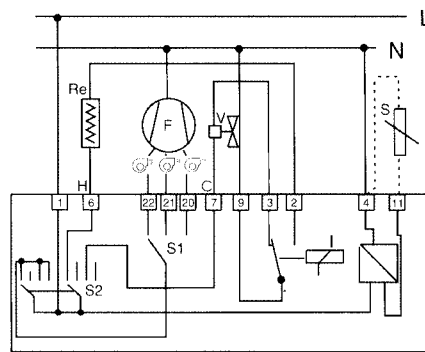




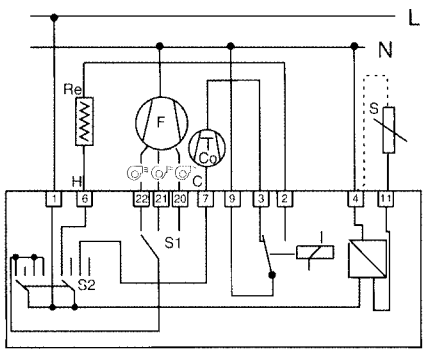
# Application notes for 527 22



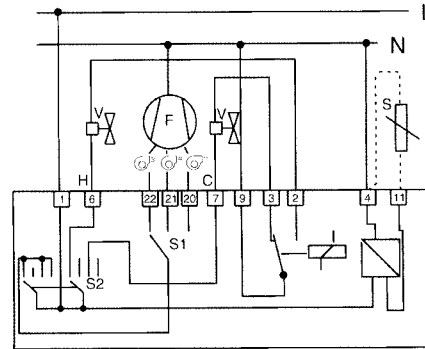
2-pipe-fan-coil for cooling only.  
Fan manually adjustable.



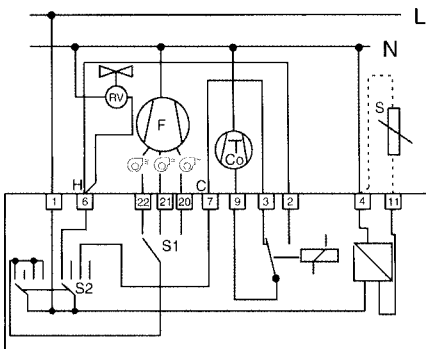
2-pipe-fan-coil for cooling and electric heating.  
Fan manually adjustable.



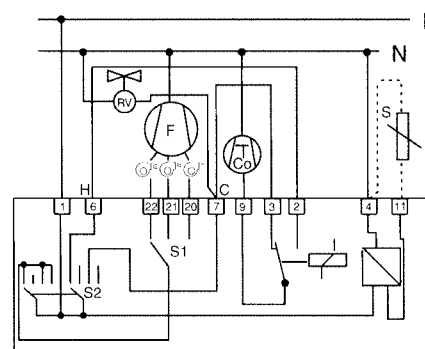
Compressor for cooling and electric heating.  
Fan manually adjustable.



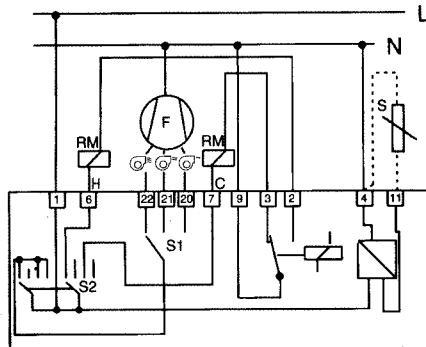
4-pipe-fan-coil.  
Fan manually adjustable.



Heatpump with reverse valve (active in heating position). Fan manually adjustable.



Heatpump with reverse valve (active in cooling position). Fan manually adjustable.



Control for power relays.  
Fan manually adjustable.

## Legende:

C = Cooling	RV = Reverse Valve
Co = Compressor	S = Remote Sensor (optional)
F = Fan	S1 = Switch for fan speed
H = Heating	S2 = Switch for mode
R = Switching Relay	V = Valve
Re = Electric Resistor	

## Notes:

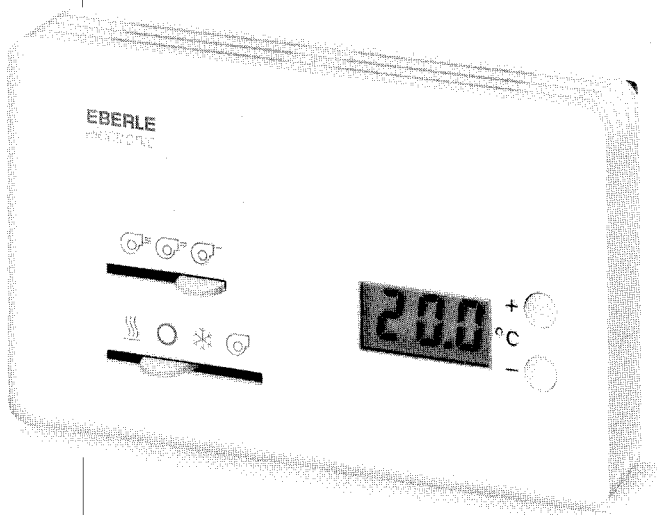
If you use an external sensor, please do not forget that the internal sensor must be cut (grey component in the right bottom edge marked with „33 k“).

The relay contacts are potential free. \*

## \*Attention

The potentialfree contacts of this mainsoperated device do not guarantee a possible demand for a safety extra low voltage SELV (safe isolation).

# KLRe 527 24



## Application example:

The 527 24 series is a micro-processor controlled thermostat with intelligent control algorithm (PID).

Consequently, apart from the display of the room temperature, the control quality is greatly enhanced in all applications.

The air conditioning control 527 24 can be used to control air conditioning devices, e.g. 4-pipe, 2-pipe fan coil, heat pump with reversing valve, etc.

## Technical Data

Operating voltage	230 V $\pm$ 5 V 50 Hz
Temperature range	5 to 30 °C
Selectivity of set value	0.5 K
Display range (actual value)	0 ... + 40 °C
Selectivity of actual value	0.1 K
Switching current at 250 V AC	3 (2) A
Max. fan current	6 (3) A
Max. current (Terminal 1)	12 A
Sensor system	NTC (in housing)
	remote sensor optional, no. 193720
Switches	fan speed
	heating/off/cooling/fan
Storage temperature range	-25 ... +65 °C
Max. wire length (Terminal 19)	150 m per unit

## Accessories:

Remote sensor  
No. 000 193 720 000

Mounting plate  
No. 007 631 488 005

see page 35/36

## Order number:

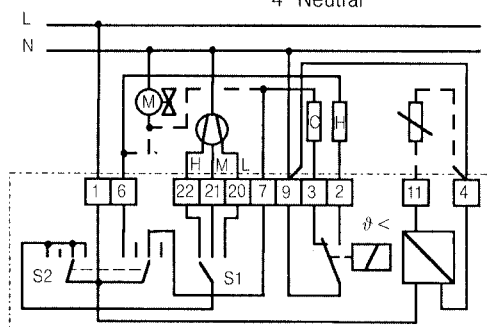
0527 24 141 960 = 230 V

## Note:

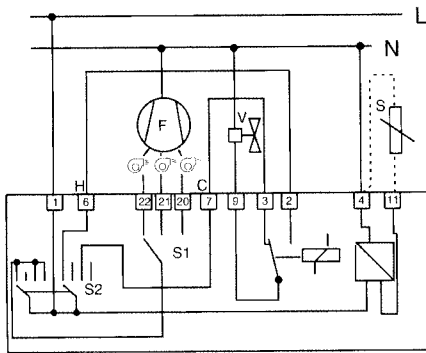
24 V AC on request

## Wiring diagram 527 24

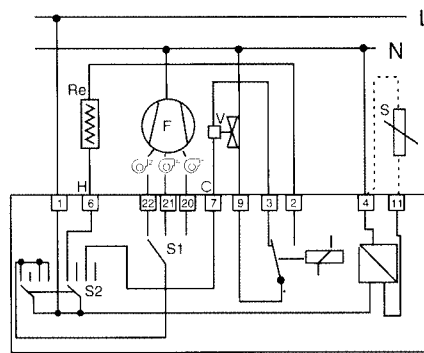
- |             |                    |
|-------------|--------------------|
| 1 L-supply  | 7 Cooling          |
| 6 Heating   | 9 Supply for relay |
| 22 Fan high | 3 Cooling          |
| 21 Fan med  | 2 Heating          |
| 20 Fan low  | 11 Remote sensor   |
|             | 4 Neutral          |



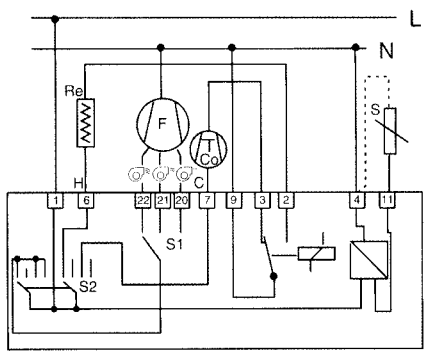
# Application notes for 527 24



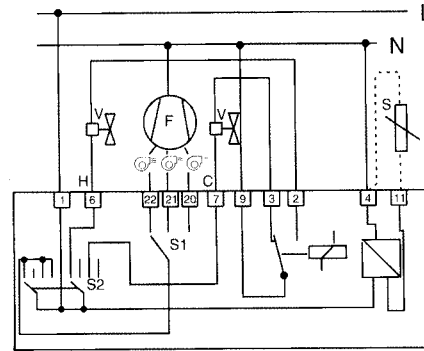
2-pipe-fan-coil for cooling only.  
Fan manually adjustable.



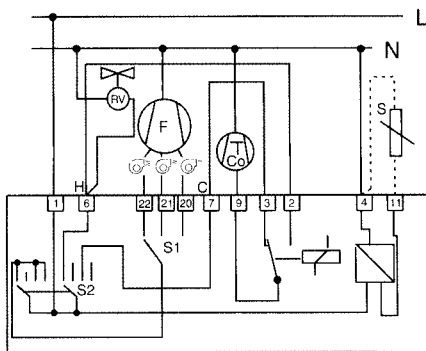
2-pipe-fan-coil for cooling and electric heating.  
Fan manually adjustable.



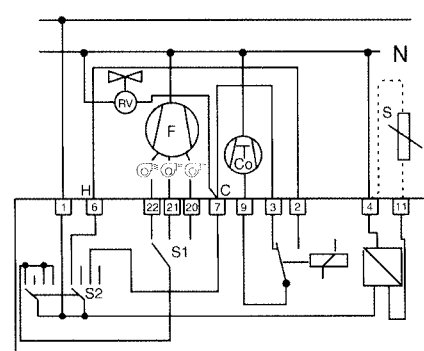
Compressor for cooling and electric heating.  
Fan manually adjustable.



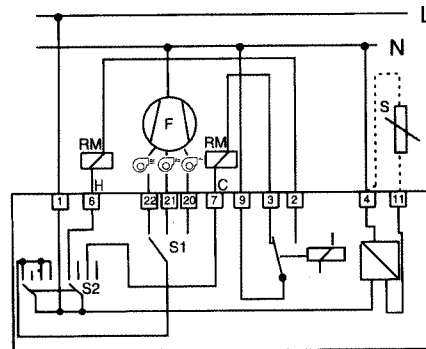
4-pipe-fan-coil.  
Fan manually adjustable.



Heatpump with reverse valve (active in heating position). Fan manually adjustable.



Heatpump with reverse valve (active in cooling position). Fan manually adjustable.



Control for power relays.  
Fan manually adjustable.

## Legende:

C = Cooling	RV = Reverse Valve
Co = Compressor	S = Remote Sensor (optional)
F = Fan	S1 = Switch for fan speed
H = Heating	S2 = Switch for mode
R = Switching Relay	V = Valve
Re = Electric Resistor	

## Notes:

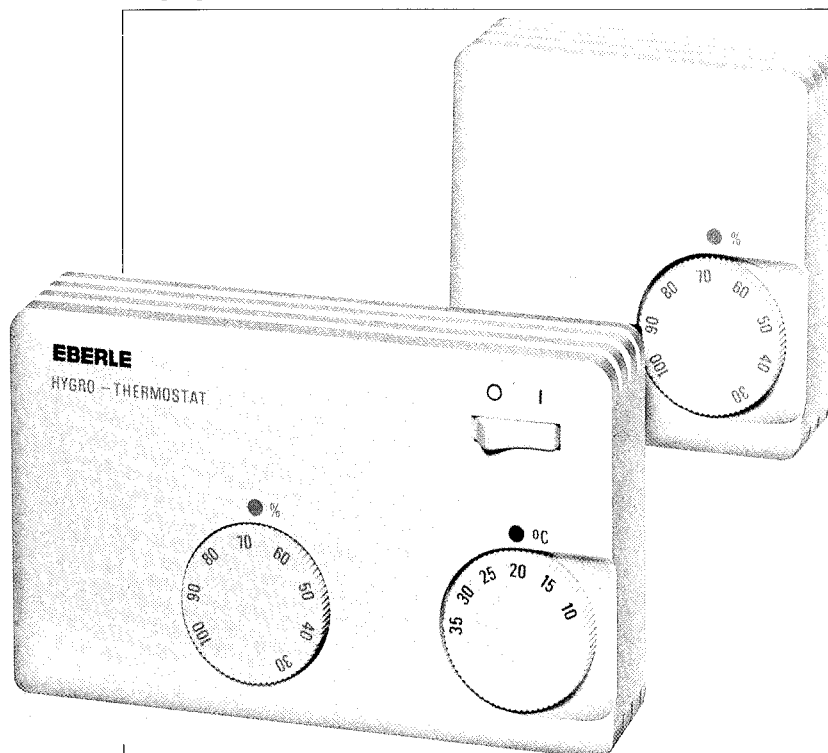
If you use an external sensor, please do not forget that the internal sensor must be cut (grey component in the right bottom edge marked with „33 k“).

The relay contacts are potential free. \*

## \*Attention

The potentialfree contacts of this mainsoperated device do not guarantee a possible demand for a safety extra low voltage SELV (save isolation).

# Hygrostats 6001/7001



## Application:

The hygrostats 6001 and 7001 are suitable for wall mounting for the automatic operation of humidifiers or de-humidifiers.

The 7001 hygrothermostat also contains a room thermostat with changeover contact for combined control of humidity and temperature (e.g. in swimming pools)

## Accessories:

see page 35/36

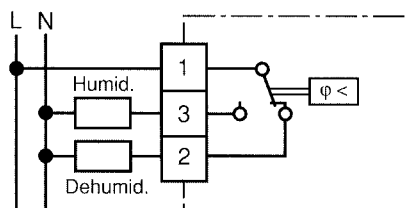
## Order numbers:

17905 6001 105 – hygrostat

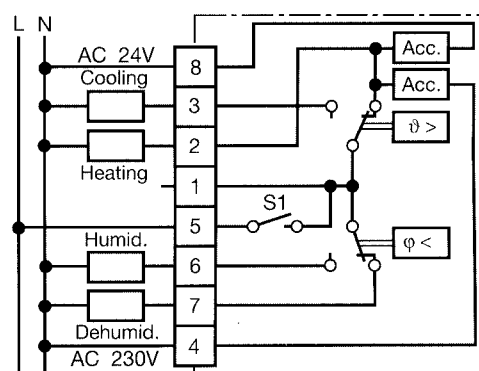
17925 7001 105 – hygrothermostat

Technical data	6001	7001
<b>Hygrostat</b>		
Operating voltage	24 to 230 V AC	24 to 230 V AC
Switching current at 250 V AC	5 (0.2) A	5 (0.2) A
Contact configuration	SPDT	SPDT
Adjustment range	30 to 100 % RH	30 to 100 % RH
Switching differential	approx. 8 %	approx. 8 %
<b>Thermostat</b>		
Operating voltage	–	24 V or 230 V AC
Switching current at 250 V AC	–	normally closed: 10 (4) A
	–	normally open: 5 (2) A
Temperature range	–	10 to 35 °C
Switching differential	–	approx. 0.6 K
Contact configuration	–	SPDT
Dimensions (see page 34)	Type "1 S"	Type "1.7 S"

Wiring diagram 6001:

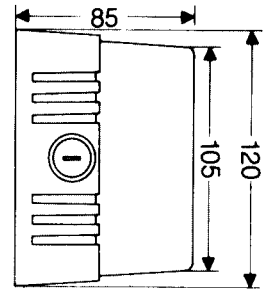
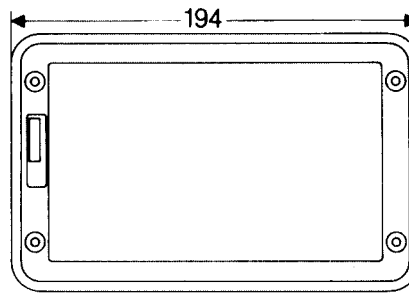
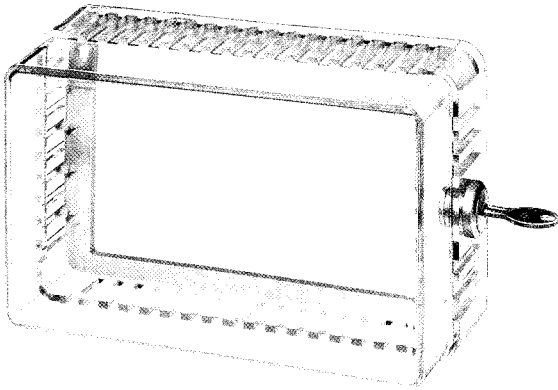


Wiring diagram 7001:



S1 On/Off

## Accessories



Lockable wall mounted housing to prevent unauthorized tampering with various controls. Suitable for public buildings, shops, offices, etc.

**Order number:**

473 051 000 006

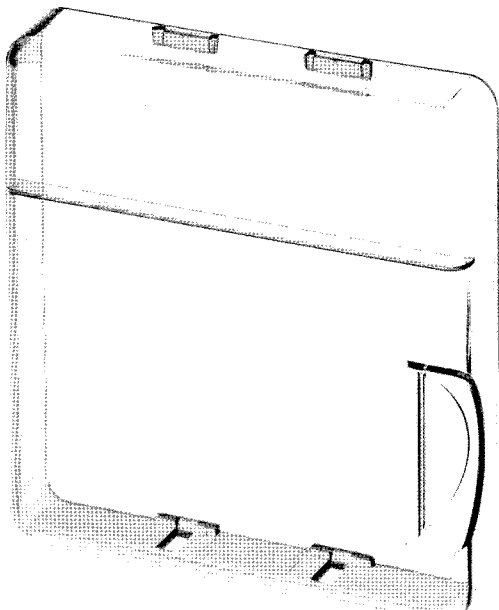
### DIN rail clip

This clip enables all 3000 and 6000 series thermostats to be mounted on 35 mm DIN rail.



**Order number:**

007 63 1565 000



Tamperproof cover for the type „1 S“ series of thermostats made of smoked plastic.

**Order number:**

007 63 1446 001 – for „1 S“

# Accessories

## Plastic mounting plates for mounting controllers to all international junction boxes.

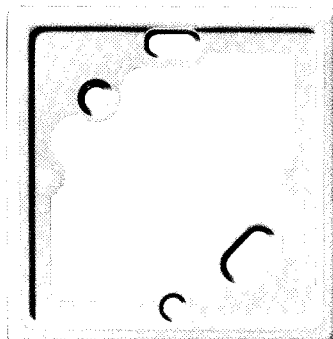
These mounting plates enable all controllers to be fitted to flush junction boxes with rear entry cable or direct to a wall surface to provide an attractive surrounding frame.

### Order number:

007 70 0637 004 – polar white RAL 9010

plus self tapping screws:  
007 10 3188 001

suitable for:  
Thermostats series 3000  
6000  
Hygrostat 6001

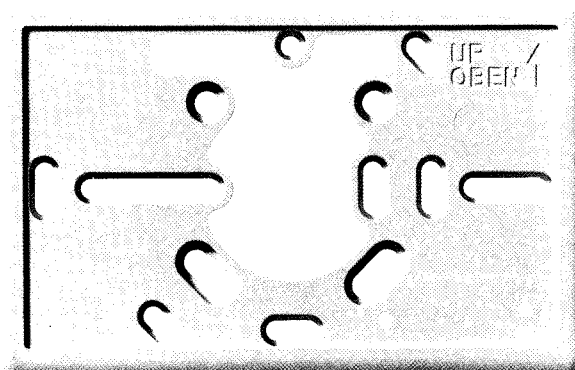


### Order number:

007 63 1488 005 – polar white RAL 9010

plus self tapping screws:  
007 10 3188 002

suitable for:  
Thermostats series 7000  
525 52  
525 55/56  
527 22/24  
Hygrothermostat 7001

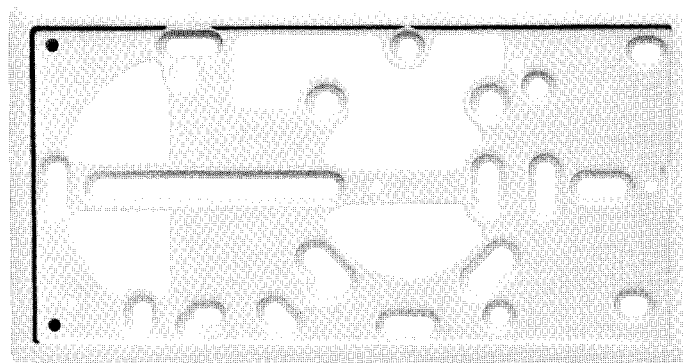


### Order number:

007 63 1528 104 – polar white RAL 9010

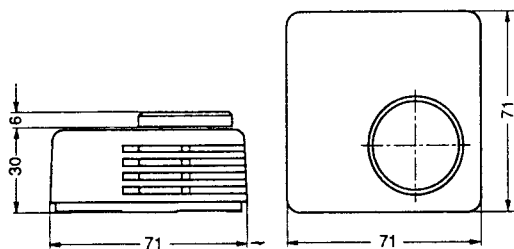
plus self tapping screws:  
007 10 3188 002

suitable for:  
Thermostats series 525 61  
INSTAT 7

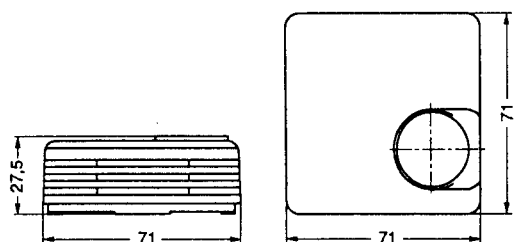


# Design and dimensions

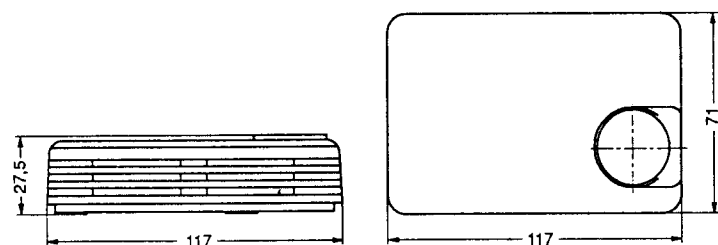
Standard housing  
type "EUROPA"



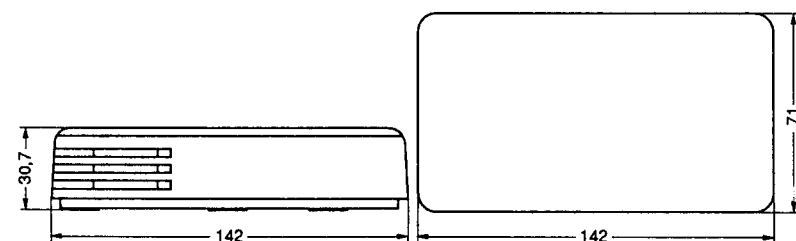
S-class housing  
type "1S" (1×1)



S-class housing  
type "1.7S" (1×1.7)



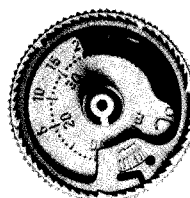
S-class housing  
type "2S" (1×2)



## Cut energy bills!

Range stops are incorporated in the setting knob as a standard feature in all S-class housings. The required range or a fixed temperature in °C can be decided on. No pegs etc. are necessary, so there is no question of losing these.

All housings meet IP 30 protection class according to DIN 40 050.



# EBERLE

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