

## Mounting and Operating Instructions

Electronic floor temperature controller with set-back input  
RAM 751



cover 2 parts (50x50)

### Caution-1!

The device may only be opened and installed according to the circuit diagram on the device or these instructions by a qualified electrician. The existing safety regulations must be observed.

In order to comply with safety class II, the necessary installation steps must be taken.

This independently mountable electronic device is designed for controlling the temperature in dry and enclosed rooms only under normal conditions. The device conforms to EN 60730, it works according operating principle 1C

## 1. Applications

The electronic floor temperature controller is used for controlling electric:

- direct floor heating
- floor temperature conditioning systems

### Features

- Nighttime set-back, input for external clock
- Indicator lamps for "controller calls for heat" and for set-back operation
- 2-pole mains switch
- Mounting in 60mm flush-type box

## 2. Description of functions

### 2.1 Functions

The floor temperature is set via the dial and is measured by the remote sensor.

The scale of \*...5 corresponds to a temperature of 10...50°C.

### Lamps

Red: Controller calls for heat  
Green: Set-back mode is activated

### 2.2 Functions of the set-back input TA

The TA input is used to set various set-back functions, refer to table below.

The functions are selected via the mains sine half-waves. The functions correspond to the "Pilot wire" specification.

Half-wave	Function
none	no set-back
both	set-back acc. to J2
positive	control off
negative	anti-freeze = 10°C
both pulsed short	set-back by 1°C
both pulsed long	set-back by 2°C

The anti-freeze function regulates to a temperature of 10°C.

This multi-function input makes it possible to activate controller functions by means of the various half-waves of the mains AC voltage:

Normal operation:	input open	
Temp. set-back:	both half-waves	
Anti-freeze:	negative half-wave	
Heating off:	positive half-wave	

### 2.3 Selecting the set-back temperature

By means of the J2 jumper it is possible to select 3° or 5°.

J2 closed	set-back by 5°C (factory pre-set)
J2 open	set-back by 3°C

The temperature set externally via the dial is reduced by this value.

### 2.4 Fault of the floor sensor

If a sensor fault (short-circuit or break) occurs, the controller will switch to fault mode. The heating will function with max. 30% of the energy (operation for 30% of the time). This provides frost- and overheat protection. In the event of a sensor fault, both lamps will flash.

### 2.5 Function of the lamps

Function	Lamp green	Lamp red
Heating is on		on
Set-back mode	on	
Floor sensor fault	flashes	flashes

## 3. Electrical connection

### Caution! De-energize the electric circuit first

Perform the steps described below:

- Pull off the temperature dial
- Release the fixing screw
- Remove the upper part of the casing
- Connect acc. to circuit diagram (see bottom of casing)

### Floor sensor F 193 720

The remote sensor must be mounted in such a way that the temperature to be limited can be correctly recorded.

The remote sensor should be installed in a protective tube. This will facilitate future replacement.

Do not install the sensor close to power lines. In other cases a shielded cable has to be used.

The sensor can be extended to max. 50 m by means of a cable suitable for mains voltage.

### Caution!

The sensor lines are on mains voltage (230 V).

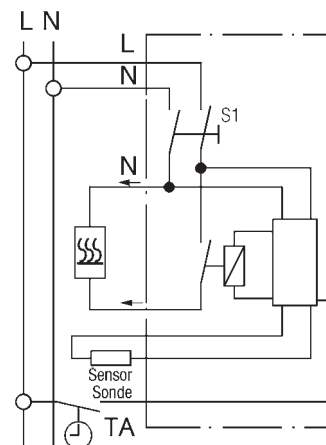
## 4. Technical data

Order designation	RAM 751
EDP No.:	751 0 131
Temperature setting range:	
Floor temperature	*...5 (= 10...50°C)
Indicator lamp red	Controller calls for heat
green	Set-back temperature
Power switch	2-pole
Supply voltage	230 V AC (195...253 V) 50 Hz
Output	Relay make contact
Switching current	100 mA...16 A cosφ = 1; 100 mA... 4 A cosφ = 0.6
Control algorithm	Proportional controller (similar to continuous through PWM)
Switching temperature differential	~1°C
Temperature sensor	Type F 193 720 (length 4 m, can be extended to max.50 m)
Temperature set-back	3 K or 5 K selectable s. 2.3 via external timer
Range limitation	in the dial
Degree of protection of casing	IP 30
Safety class	II (see Caution-1)
Degree of pollution	2
Software class	A
Calculation impulse voltage	2,5 kV
Temperature for the Ball compression test	75°C
Voltage and Current for the for purposes of interference measurements	230V, 0.1 A
Ambient temperature	0...40°C
Storage temperature	-25...70°C
Weight	90 g

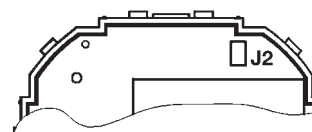
### Characteristics for remote sensor

10°C	66.8 kΩ	30°C	26.3 kΩ
20°C	41.3 kΩ	40°C	17.0 kΩ
25°C	33 kΩ	50°C	11.3 kΩ

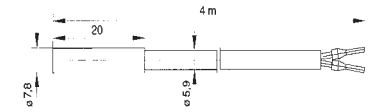
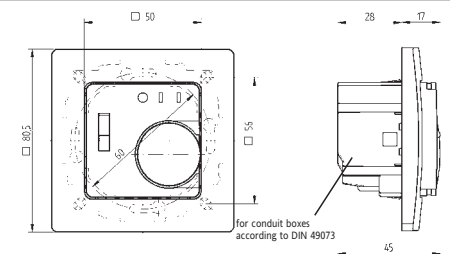
## 5. Circuit diagram



### Position of the jumpers



## 6. Dimensions



Theben AG · Hohenbergstr. 32  
72401 Haigerloch · DEUTSCHLAND  
Fon +49 (0) 74 74/6 92-0  
Fax +49 (0) 74 74/6 92-150

### Service

Fon +49 (0) 74 74/6 92-369  
Fax +49 (0) 74 74/6 92-207  
hotline@theben.de

Addresses, telephone numbers etc.  
at www.theben.de