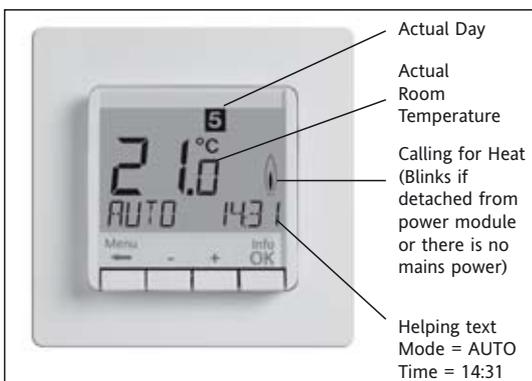


# User and installation guide

## Room Temperature Controller FIT 3R



### 1 Principle of operation

The programmable room temperature controller FIT 3R allows programming switching events (up to 9) and temperatures according to personal needs. After installation the device automatically shows the time of day and the room temperature. In AUTO mode, the Heater (Cooler) will be automatically activated according to programmed time and temperature. Program 1 is the default pre-set program (see 8). The room temperature will be controlled according to the temperature measured by the internal or remote sensor. The Heater will be switched on when the temperature drops below the current set-point.

### 2 Installation

#### Caution!

This device must be installed by a qualified electrician, according to the wiring diagram on the device and in compliance with all applicable safety regulations. To maintain compliance with Protection Class II, user access to the rear of the device must be prevented... This device, is used to control the temperature only in dry rooms, under normal environmental conditions. This electronic device conforms to EN 60730, It is an "independently mounted control" and works according to operating principle 1C.

### 3 Use

The electronic Room Temperature Controller FIT 3R can be used to control the room temperature in conjunction with:

- Thermal actuators for e.g. water based floor heating or convector heaters
- Oil or Gas heaters
- Circulation pumps
- Heatpumps
- Electric convector heaters, ceiling and storage heating
- Cooling equipment

### 4 Features

- One line text display for simplified operation
- Back light
- Real time clock (setting of year, month, day, time)
- Automatic Summer- Winter time change over
- Max 9 events per day (each day independently)
- Pre-set and adjustable programs
- Optimum-Start
- Arm chair programming (with display unit removed)
- OFF-Function, Key ← to be pressed for 10 sec
- Holiday-Mode (date from – until can be set)
- Timer (Party) specific temperature for configurable duration
- Energy consumption display (heating on time \* cost) for last 2 days, -week, -month, -year
- Energy cost per hour configurable
- Frost protection
- Range limits for adjusting max and min temperature
- Access protection
- Operating language can be selected
- Control mode PWM or ON/OFF
- Minimum output on/off time and hysteresis configurable for ON/OFF control
- Valve protection
- Heating or Cooling can be selected.
- Adaptation to valves normally open or normally closed
- Measures the room temperature with the internal sensor or a remote sensor

### Electric connection

#### Caution: disconnect electric circuit from supply

Connecting according to Wiring Diagram  
For flexible or solid wires 1-2,5mm<sup>2</sup>

### 5. Mounting

The controller should be mounted at a location in the room which:

- can be easily accessed
- is free of curtains, cabinets, shelves, etc.
- allows free air circulation
- is not exposed to direct sunlight
- is not draughty (when doors or windows are opened)
- is not directly influenced by the source of heat/cooling
- is not located on an outer wall
- is approx. 1.5 m above the floor.

### Fitting

- in a conduit box Ø 60 mm
- remove the display unit
  - remove the frame
  - Mount it following the reverse procedure

#### Caution!

Mounting in plastic wall boxes only

### Connecting the remote sensor F 193 720 or F190 021 (optional)

In order to measure the room temperature, instead of the internal sensor an external one can be used.

Remote or internal sensor selection can be made via menu item H1.

Lay sensor inside a protective tube (simplifies replacement). The sensor lead can be extended up to 50 m by using a cable and connections suitable for 230V. Avoid laying sensor cable alongside power cables, for example inside a conduit.

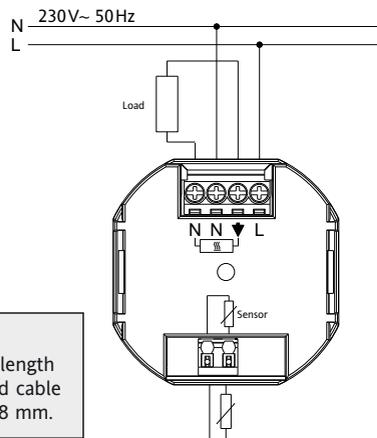
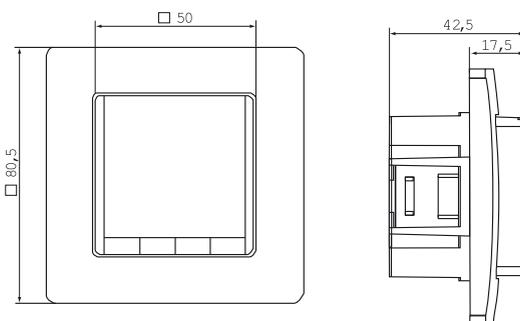
#### Caution!

The sensor is at mains voltage.

### 6 Technical Data

Order Type	FIT 3R
Supply voltage	230 V AC 50 HZ (195...253 V)
Temperature setting range	5 °C ... 30 °C; in 0,5 °C steps
Temperature resolution	0,1 °C steps
Output	Relay NO contact
Switching current	10mA .10(4)A AC; 230 V~
Output signal	PWM (Pulse Width modulation) or ON/OFF
PWM cycle time	adjustable
Hysteresis	adjustable (ON/OFF only)
Minimum programmable time	10 Min
Power consumption	~ 1,2 W
Accuracy of clock	< 4 Min / year
Power reserve	~ 10 Years
Remote sensor (optional)	F 193 720, length 4m, F190 021
Ambient temperature	without condensation
Operating	0 °C ... 40 °C
Storage	-20 °C ... 70 °C
Rated impulse voltage	4 kV
Ball pressure test	115 °C
Voltage and Current for the purposes of interference measurements	230 V, 0,1 A
Degree of protection	IP 30
Protection class of housing	II (see Caution)
Pollution degree	2
Software class	A
Weight	~ 100 g

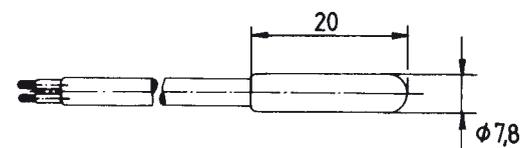
### 7 Wiring Diagram / Dimensions



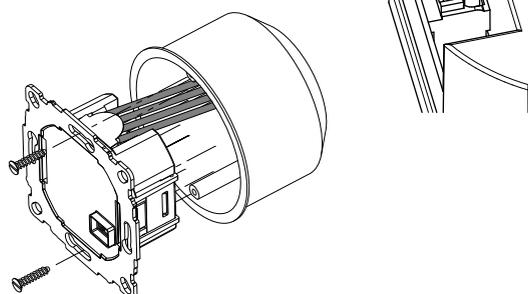
#### Caution!

Maximum length of removed cable insulation 8 mm.

### Remote sensor F 193 720 (as accessory)



To insert or remove a flexible wire press pin



The plastic tab must be in place to provide insulation between the terminals/wires and the mounting screw.

### Remote sensor F 190 021 (as accessory)



### 8. Pre-set programs

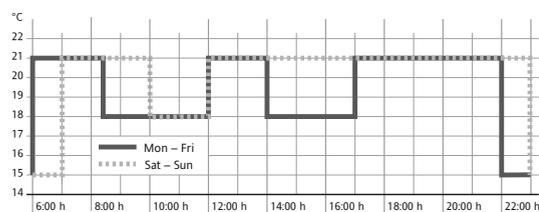
There are 3 pre-set time/temperature programs in the controller. Pre-set program 1 (as shown below) is the default. Therefore, if pre-set program 1 is the best program to suit the application, there will be no need to change the time/temperature settings on the device.

To select another program see 9. G1.

#### Program 1

Monday to Friday						
Events	1	2	3	4	5	6
Time	06:00	08:30	12:00	14:00	17:00	22:00
Temperature °C	21,0	18,0	21,0	18,0	21,0	15,0

Saturday and Sunday						
Events	1	2	3	4	5	6
Time	07:00	10:00	12:00	14:00	17:00	23:00/22:00*
Temperature °C	21,0	18,0	21,0	21,0	21,0	15,0

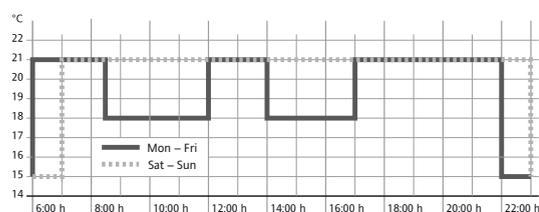


\*23:00/22:00 = 23:00 for Saturday

#### Program 2

Monday to Friday						
Events	1	2	3	4	5	6
Time	06:00	08:30	12:00	14:00	17:00	22:00
Temperature °C	21,0	18,0	21,0	18,0	21,0	15,0

Saturday and Sunday		
Events	1	2
Time	07:00	23:00/22:00*
Temperature °C	21,0	15,0

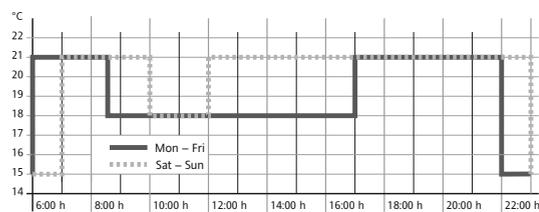


\*23:00/22:00 = 23:00 for Saturday

#### Program 3

Monday to Friday				
Events	1	2	3	4
Time	06:00	08:30	17:00	22:00
Temperature °C	21,0	18,0	21,0	15,0

Saturday and Sunday				
Events	1	2	3	4
Time	07:00	10:00	12:00	23:00/22:00*
Temperature °C	21,0	18,0	21,0	15,0



\*23:00/22:00 = 23:00 for Saturday

### Notes for Programming

- Activated settings terminate automatically 3 Min after the last key press, without saving. They return to the mode which was active before entering the settings, e.g. AUTO, MAN, etc.
- Entering a Code: change value with + - key then press OK
- When going through User- or Installer settings the item number used in the manual will be displayed, e.g. G1 for "Program select one" or H2 for "Control Mode".
- There may be gaps in the sequence of menu numbers.

### Troubleshooting

1. It is getting warm too late:
  - a. Are clock and program events set correctly?
  - b. Is the Optimum Start feature switched on? see H7  
Did the controller have enough time (several days) to adapt to the room's characteristics?
  - c. Is an automatic change between Summer- and Winter time activated, see G5
2. The controller does not accept any changes  
Is access protection switched on? see G6
3. The range of temperature setting is limited.  
Are temperature limits set? See G7
4. Temperature display doesn't change.  
Is display of set-temperature activated? See G10

## 9 Description of Functions and Operation

### Selecting languages

Only for products where no language is pre-set, user has to set up his language by doing this: **ENGLISH** + – to select language  
(This input is only requested at first start or Reset) **2 x OK** to accept -> AUTO will be displayed (to change language again use menu G14)

### How the FIT Temperature Controller can be used

Change temperature until next switching event see <b>keys, + – in AUTO</b>	Set temperature for a number of hours see <b>main menu, TIMER</b>	Adjust the controller to personal needs see <b>main menu, USER-SETTINGS</b>
Controlling the temperature according to pre-set profiles see <b>main menu, AUTO</b>	Set temperature for a specific date see <b>main menu, HOLIDAY</b>	Adjust the controller to application needs see <b>main menu, INSTALLER-SETTINGS</b>
Set a constant temperature (manual operation) see <b>main menu, MAN</b>	Use a separate program for special days see <b>main menu, AT-HOME</b>	

Keys		to confirm / activate
+ – in AUTO (-)	Set temperature temporarily until next switching event. Indicated by "-" behind AUTO-. First key-press shows set value, following ones change it.	OK
+ – in menu	Scroll through the menu	
OK	Accepts modification /selection	
Info	Show related details in AUTO, MAN, TIMER, HOLIDAY, AT-HOME. To cancel press key again	
Menu	Enter menus. + – Key to move	
←	Go one step back	
← for 10 sec	Switch off connected load. Display shows OFF. Details see G4	

Main Menu		to confirm / activate
A MENU	Use + – in order to navigate through the menu	
B AUTO	The temperature will be controlled automatically according to the time and temperature of the selected program, see G1. Use + – keys to change temperature until next switching event.	OK
C MAN	The temperature will be controlled continuously according to the temperature set in this menu. Use + – key to change temperature.	OK
D TIMER	The temperature will be controlled temporarily according to the hours and temperature set in this menu. On terminating TIMER mode, the previously active mode will be re-activated. Holiday terminates Timer.	OK
E HOLIDAY	The temperature will be controlled between the dates and the temperature set in this menu. Holiday starts at 0h of the first day, it ends at 24h of the last day. In the period of time before HOL starts, AUTO will be active. While waiting for holiday start date, other mode can be selected (AUTO, MAN, TIMER, HOME). INFO provides details of the pending holiday. In this situation holiday period will start automatically when the DATE FROM occurs. When holiday ends it returns to the mode which was in place before activating holiday.	OK
F AT HOME	The temperature will be controlled automatically according to the time and temperature of the program configured here (independent from AUTO). The program is the same for all days. Monday's program is used as the pre-set. It needs to be terminated by user, e.g. by selecting AUTO. Usage: for holiday at home, illness etc.	OK
G USER SETTINGS	Customise the controller according to personal requirements	OK
H INSTALLER SETTINGS	Customise the controller according to application requirements (from installer only)	OK

G USER SETTINGS	Customise the controller according to personal requirements	default settings ( ) = value range
1 Program select	Select one of the pre-defined programs, see 8. (If another program is chosen, settings will not be saved)	P1 (P1 ... P3)
2 Event Setting	Modify Time and Temperature of active program, see 8. Each event can be reduced to the previous one or to 00:00h. Each event can be extended up to 23:50h, then ->>> is indicating that the event is in the next day. By pressing + or – key at ->>> a time can be adjusted. Max 9 events are possible. The first digit indicates the actual event e.g. 3,12:00- 14:00 shows event 3. Events can be set for day-blocks as well, when selecting days (Mon...Fri, Sat/Sun, Mon...Sun). In order to finish programming, press ← repeatedly.	as selected at G1
3 Clock Settings	Set Date and Time	
4 Off Heating Permanent	Switch off the heater, the controller remains on power. Display reading OFF. Frost protection may happen if selected. See H6. Switching ON again by activating e.g. AUTO or by pressing key ← for 10 Sec. When re-activating via key ← or this menu, AUTO will be activated.	NO
5 Summer/Winter time change over	Select if automatic Summer/Winter-Time changeover	YES
6 Key Lock	Protect controller against unauthorised use. Re-activate via code = 93	NO
7 Temperature limits min/max	Limits the temperature which can be set by the user. If both values are the same, no adjustment is possible. This affects AUTO, MAN, HOL, TIMER, AT-HOME, event setting (G2). The active program /mode will not be affected automatically.	5; 30 °C
8 Cost/Hr for Energy	The assumed energy cost per hour (in cent/h) can be set. To use this feature as hour counter set the cost to 100 cent/h.	100 (1 ... 999)
9 Energy consumption to date	Shows the approximate energy cost of the controlled area. For the last: 2 days, week (7 days), month (30 days), year (365 days). On the actual day, calculation is up to current time. In case of overflow 9999 will be displayed. This feature mainly can be used for electric heating. Calculation: On-Time of heater x cost per hour see above. Reset see H9	
10 Set temperature to read	Show set temperature instead of room temperature	NO
11 Adjust Temperature	Adjust temperature to personal needs	0.0 (-5.0 ... +5.0)
13 Backlight	Continuously OFF or temporarily illuminates after key press. In case of using a remote sensor, the backlight can be set to continuous on.	SHORT (SHORT, OFF)
14 Language	Select preferred operating language	
15 Info	Displays Controller-type and -version.	
16 Reset user settings only	Only USER SETTINGS will be set to factory settings. The energy counter will not be re-set; to do this see H9).	NO

### Change INSTALLER SETTINGS

<b>CAUTION!</b> These settings should only be set-up by a qualified person. They can influence safety and the proper functioning of the system.
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H INSTALLER SETTINGS	Customise the controller according application needs (by installer only)	default settings ( ) = value range
0 Code	Enter Code (= 7) in order to access the menus. It is valid for 1 Hour	
1 Application	This controller is suitable for the heating system mentioned on right column. It can be selected if a remote sensor has to be used.	ROOM / NO see 1
2 Control Mode	PWM or ON/OFF can be selected. In case of PWM, the cycle time can be set (in Minutes). Min ON/OFF time = 10% of cycle time. Use short time for fast and longer time for slow reacting heating systems. PWM is not possible with COOLING (H4). For ON/OFF you can select: • Hysteresis (OFF = no temperature hysteresis, even at very low changes of temp. the relay will switch over according to the Min On/Off Time setting.) • Min On/Off Time (the minimum duration for the relay to be On or Off)	PWM/10 (/10 ... 30)  OFF (OFF, 0.1 ... 5.0) 10 Min (1 ... 30)
4 Heating or Cooling	Heating: Controller works in Heating mode. Cooling: Controller works in cooling mode. Conditions: • Cooling is only possible if application (H1) = ROOM • Optimum Start (H7) = NO (can not be activated) • The events and temperatures are the same as in heating (see G2) • Frost protection (H6) = NO (can not be activated) • In case of error = no cooling • Only for control mode ON/OFF (H2)	Heating (Heating, Cooling)
5 Valve protection	The output will be activated for the specified time each day at 10:00 h in the morning	3 min (OFF, 1 ... 10)
6 Frost protection	Set frost protection temperature. Only if controller is switched OFF, the temperature will be controlled to that value.	5 °C (OFF, 5 ... 30)
7 Optimum Start	The set temperature will be reached at the time specified in the program. During pre-heating time, AUTO_ will be displayed	YES
8 Valves NO	If valves normally open have to be used	NO
9 Energy Counter Reset	The energy counter will be set to 0	NO
11 Reset all	All INSTALLER and USER settings will be set to its Factory setting	NO

## 10. Error Indication

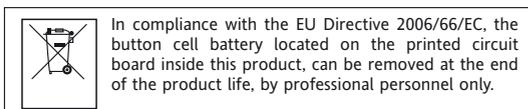
In case of errors, "Err" is blinking. The following errors can be displayed:

CONFIGURATION	Display- and powermodule do not fit → use only suitable parts → switch off and on power supply	EXT SENSOR	1. Error of remote sensor → replace sensor 2. Over- or under run of valid display range
COMMUNICATION	Communication between display- and power unit fails → unplug and re-plug display unit → switch off and on power supply		

If H4 = Heating: On all these errors, heating will be activated with 30% of time

If H4 = Cooling: On all these errors = no cooling

## 11. Batteries



In compliance with the EU Directive 2006/66/EC, the button cell battery located on the printed circuit board inside this product, can be removed at the end of the product life, by professional personnel only.

## 12. Resistance values for remote sensor

Temperature	Resistance	Temperature	Resistance
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