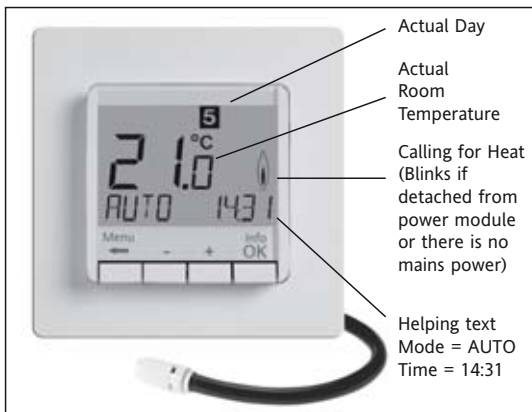


# User and installation guide

## Room Temperature Controller with Limiter FIT 3L



### 1 Principle of operation

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

In case of function "Temp Limits Min" it will be heated if the floor temp drops below the set min-value. This is even when the room temp. is too high.

In case of function "Temp Limits Max" heating will be stopped if the floor temp exceeds the set max-value. This is even when the room temp. is too low.

### 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 3L can be used to control the room temperature in conjunction with:

- electrical floor heating systems where the floor temperature has to be limited to a certain value
- hot-water floor heating systems in conjunction with thermal actuators

### 4 Features

- One line text display for simplified operation
- Back light
- Real time clock (setting of year, month, day, time)
- Automatic Summer- Wintertime change over
- Max 9 events per day (each day individually)
- Pre-set and adjustable programs
- Optimum-Start
- Arm chair programming (with removed display unit)
- OFF-Function, Key ← to be pressed for 10 sec
- Holiday-Mode (date from - until can be set)
- Timer (Party) specific temperature for some hours
- Energy consumption display (heating on time \* cost) for last 2 days, -week, -month, -year
- Energy cost per hour adjustable
- Frost protection
- Range limits for adjusting max and min temperature
- Access protection
- Operating language can be selected
- Control mode PWM or ON/OFF
- Heater restart delay
- Valve protection
- Adaptation to valves normally open or normally closed

### 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/cold
- 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

### Electric connection

**Caution: disconnect electric circuit from supply**

Connecting according to Wiring Diagram

For solid wires 1 - 2,5 mm<sup>2</sup>

### Connecting the remote sensor

The FIT 3L needs a remote temperature sensor. This sensor should be mounted in such a way that the temperature which has to be controlled, can be measured correctly. 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.

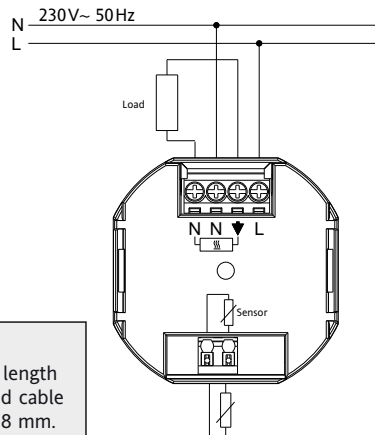
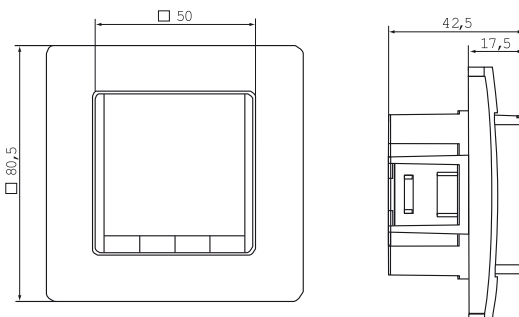
#### Caution!

The sensor is at mains voltage.

### 6 Technical Data

Order Type	FIT 3L
Supply voltage	230V 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 230V~
Output signal	PWM (Pulse Width modulation) or ON/OFF
PWM cycle time	adjustable
Minimum programmable time	10 Min
Power consumption	~ 1,2 W
Accuracy of clock	< 4 Min / year
Power reserve	~ 10 Years
Remote sensor	F 193 720, length 4 m, can be extended up to 50 m
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 (with remote sensor)	~ 280 g

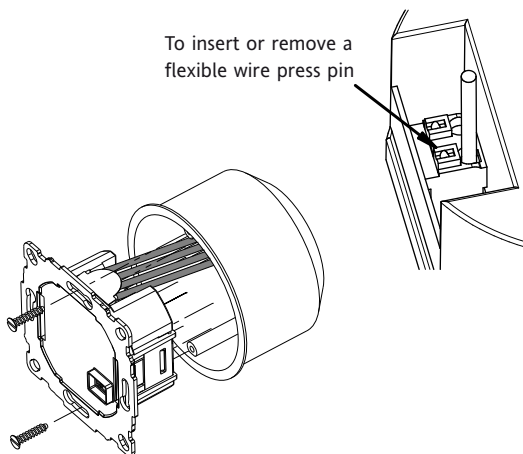
### 7 Wiring Diagram / Dimensions



#### Caution!

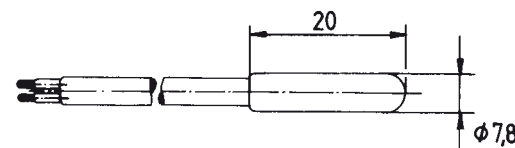
Maximum length of removed cable insulation 8 mm.

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 193 720



### 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.

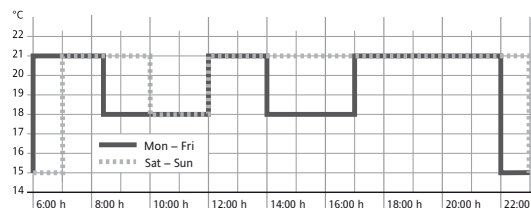
#### Program 1

##### 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

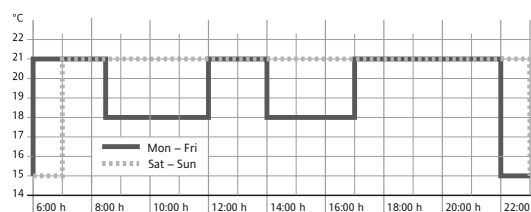
#### Program 2

##### 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

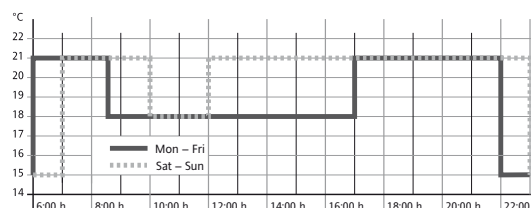
#### Program 3

##### 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 like 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 can be gaps in the sequence of numbers

### Troubleshooting

1. It is getting warm too late:
  - a. Are clock and program events set correctly?
  - b. Is the Optimum Start switched on? see H7  
Did the controller have enough time (some days) to adapt to the room's characteristics?
  - c. Is change between Summer-and Wintertime activated, see G5
2. The controller does not accept any changes  
Is the 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 G11
5. The room heats up too slow  
The floor temperature may be limited from the controller's max-limiter. See H3
6. The room becomes too warm  
The floor temperature may be limited from the controller's Min-limiter. See H3

## 9 Description of Functions and Operation

### How the FIT Temperature Controller can be used

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

Keys		to confirm / activate ↓
+ – in AUTO (-)	Set temperature temporarily until next switching event. Indication 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 reads OFF. Details see G4	

Main Menu		to confirm / activate ↓
A MENU	Use +- in order to walk 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 termination, AUTO will be re-started. HOLIDAY will be terminated.	OK
E HOLIDAY	The temperature will be controlled for the period of days and the temperature set in this menu. Holiday starts at 0h of the first day, it ends at 24h of the last day, then going to AUTO. In the period of time before HOL starts, AUTO will be active. TIMER will be terminated. During this AUTO period of time, Temp can not be changed.	OK
F AT HOME	The temperature will be controlled automatically according to the time and temperature of the program adjusted here (independent from AUTO). The program is the same for all days. Pre-set is the program of Monday 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 needs	OK
H INSTALLER SETTINGS	Customise the controller according to application needs (from installer only)	OK

G USER SETTINGS	Customise the controller according to personal needs	default
1 Program select	Select one of the pre-defined programs, see 8. (If another program is chosen, settings will not be saved)	P1
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, Programming. 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.	10
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. 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 Temperature adjustment	The displayed temperature can be adjusted to the personal needs	0.0
13 Backlight	Continuously OFF, temporarily illuminates after key press	SHORT
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 (from installer only)	default
0 Code	Enter Code (= 7) in order to access the menus. It is valid for 1 Hour	
1 Application	For this heating system the controller is suitable	LIMITER
2 Control Mode	PWM or ON/OFF can be selected. In case of PWM, the cycle Time can be set (in Minutes). Use short time for fast and longer time for slow reacting heating systems	PWM/10
3 Temp Limits min/max	Limits the floor temperature. Selectable is: Minimum floor temperature, the floor gets no colder as this temp. OFF = no limit Maximum floor temperature, the floor gets no warmer as this temp. OFF = no limit e.g. Min-Temp. = 21°, the floor get no colder as 21° even if the room is too warm Max-temp. = 35°, the floor gets no warmer as 35°, even if the room is too cold If one of these limits is not needed it should be set to OFF	OFF 35 °C
4 ON delay	After switching off, the controller will wait this time until switching on again. It has no effect to PWM.	5 min
5 Valve protection	The output will be activated for the specified time each day at 10:00h in the morning	3 min
6 Frost protection	Set frost protection temperature. In OFF mode only, the Temperature will be controlled to that value.	5 °C
7 Optimum Start	The set temperature will be reached at the time specified in the program. During pre-heating time, AUTO_ will be displayd	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
10 Display of floor temperature	The temperature measured from remote sensor will be displayed (for service purpose)	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 external sensor → remove 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		

On all these errors, the relay will be off

## 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.