Introductions for HC71 (Edition V4.1)   02000121_1.2 GB

This instruction is divided into two parts. <u>User-Instructions</u> and last in this instruction, the <u>Installation-instructions</u>.

User-Instructions

HC71is designed for heating systems especially Electrical Underfloor Heating. It will be easy to understand and use its functions.

The Thermostat starts in Manual mode with floor sensor and temperature min. limit 5°C and max. limit 40°C.

Wooden floors should have floor limit at approx. 27°C.

Note: When Power Regulator mode is used, only Floor Sensor limit is activated.

A) The thermostat has three modes:

- <u>Manual mode</u> gives a simple temperature control. No programming needed to use the thermostat, however more useful functions i.e. Child Lock is possible to choose in Manual mode.

  Manual mode is activated first time the thermostat is connected and after a Factory Reset.

  Also choose Manual mode to cancel the programmed Event schedule (e.g. during holidays, for easy 5℃ frost protection) and to set the required temperature manually.

  - <u>Power Regulator mode</u> is a sub menu to Manual mode. Power Regulator mode can control the underfloor heating without being influenced by other heat sources in the room.

    Power Regulator run in 12-minute cycles. The user set how many minutes (out of the 12-minute cycle), the heating element is warming.

    I.e. Power Regulator set to 25%. Heating-element is on 3 out of 12 minutes = Power is 25% of max.

    I.e. Power Regulator set to 50%, the heating-element is on 6 out of 12 minutes = Power is on 50% of the time.

    Floor sensor temperature limit is activated.

- <u>Auto mode</u> offers an intelligent temperature control automatically lowering temperatures according to you needs i.e. during the night.

  This function will run the Electrical Underfloor Heating in a very economical way, without compromising the comfort.

Stand by - activate

Press Menu button for 3 seconds to set thermostat is in stand by. No settings will be changed the thermostat will turn off, all the settings, including time and date will be saved.

Stand by - exit

Press Menu(middle) button and Exit Stand by.

Memory function

For memory function to work, the backup-battery must first charge 24h. Charging begins when the thermostat are connected to power.

In case of power cut and fully charged backup-battery all setting are stored 1-2 days.

If the power cut is longer than the backup-battery can store settings the thermostat will restart in factory setting.
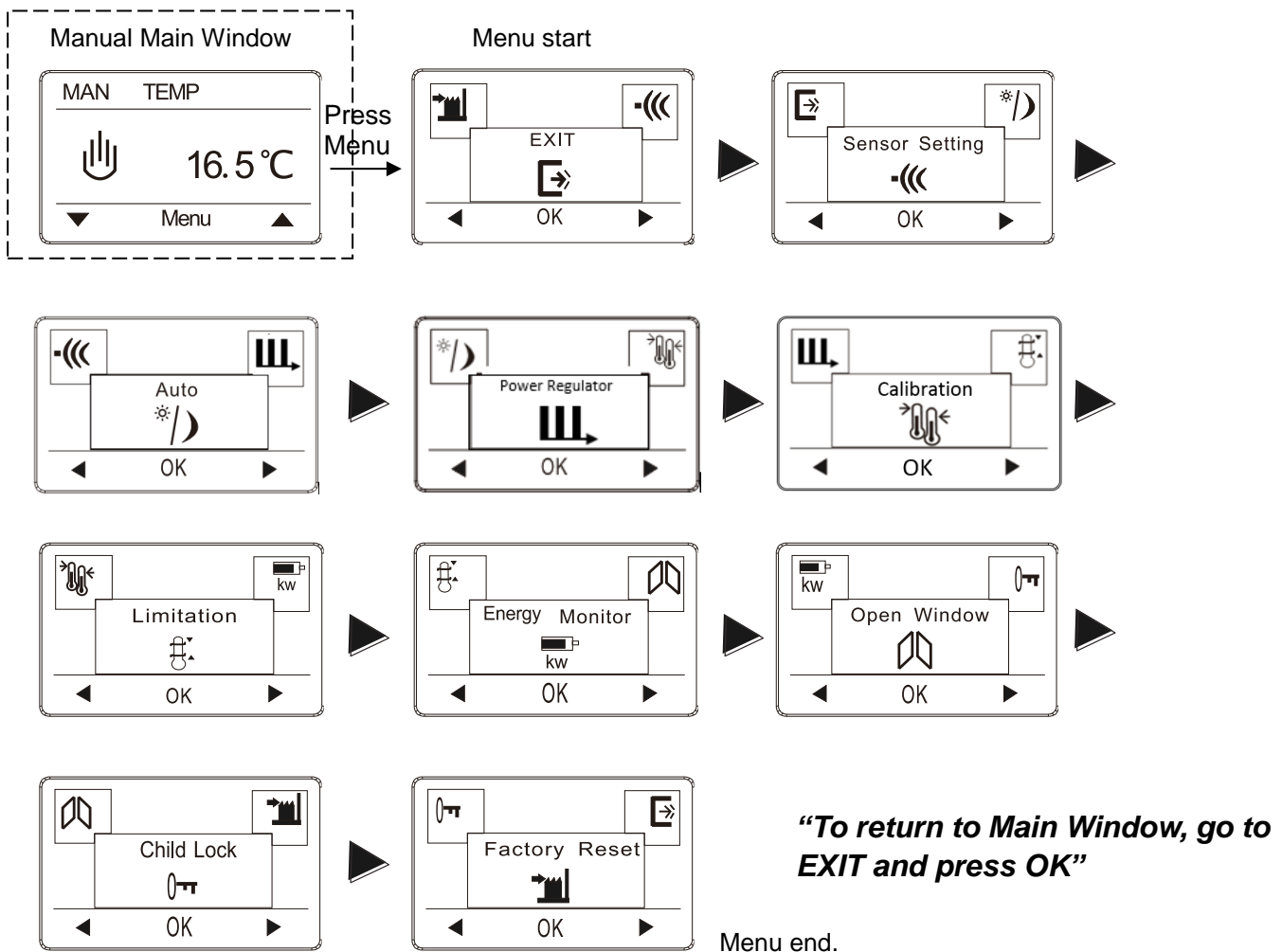
Technical data

Type	HC71
Supply voltage	100～240 VAC 50/60 Hz
Maximum Load	16 A
Operating temperature	0～50 ℃
Storage temperature	-10～60 ℃
Temperature range, room sensor	5～40 ℃
Temperature range, floor sensor	5～40 ℃
Running modes	Manual / Automatic / Power Regulator (12min. cycles)
Sensor options	Floor / Room / Room with Floor sensor as temperature limiter
Sensor calibration	Yes - adjustable
Floor temperature limiter	Yes – high and low, adjustable
IP class	IP21
Terminals	Max. 2.5 mm^2
Floor sensor with 3.5m cable	NTC, 10 K / 25 ℃
Dimensions	82 mm×82 mm×56 mm
Colors	Polar white RAL 9010 / Signal white RAL 9003 / Matte black
Night and day set-back	Yes – 3 modes. Individually adjustable
Open Window detection	Yes – On/Off
Energy Monitor	Yes – max. duration one week. Require specific Load setting
Child Lock	Yes – On/Off
Memory function	Yes - 1-2 days (when backup-battery is fully charged)

Apply to: LVD 2014/35/EU • EN60730-1 • EN60730-2-9 • EN50081-1 • EN50082-1 • RoHS

(EU)2015/1188 ECO Design

✋ Manual mode menu.

Use the arrow buttons to run forward or backwards in the Menu sequence.

If more information to the specific menus are needed, please see Thermostat setup options page 4.

Manual Main Window		
MAN TEMP		
✋	16.5℃	
▼	Menu	▲

Press Menu →

Menu start

| EXIT | → |
| OK ◄ ► |

▶

| Sensor Setting | ☼) |
| -(((|
| ◄ OK ► |

▶

| -(((| Ⅲ→ |
| Auto |
| ☼/) |
| ◄ OK ► |

▶

| ☼/) | 🌡← |
| Power Regulator |
| Ⅲ→ |
| ◄ OK ► |

▶

| Ⅲ→ | 🌡 |
| Calibration |
| 🌡← |
| ◄ OK ► |

▶

| 🌡← | kw |
| Limitation |
| 🌡 |
| ◄ OK ► |

▶

| 🌡 | ◇◇ |
| Energy Monitor |
| kw |
| ◄ OK ► |

▶

| kw | ⊙┭ |
| Open Window |
| ◇◇ |
| ◄ OK ► |

▶

| ◇◇ | → |
| Child Lock |
| ⊙┭ |
| ◄ OK ► |

▶

| ⊙┭ | → |
| Factory Reset |
| → |
| ◄ OK ► |

"To return to Main Window, go to EXIT and press OK"

Menu end.

✋ to 🕐 Change from Manual to Auto mode.

• Press Menu and roll forward til Auto menu window.

• Press OK to activate Auto mode. Enter hour, minute, weekday and load(if load is known).

Ⅲ→ Press OK to activate Power Regulator mode.

• If floor sensor is installed set "LIMIT FLOOR TEMP TO MAX" temperature. Default temperature limit setting is 27 ℃.
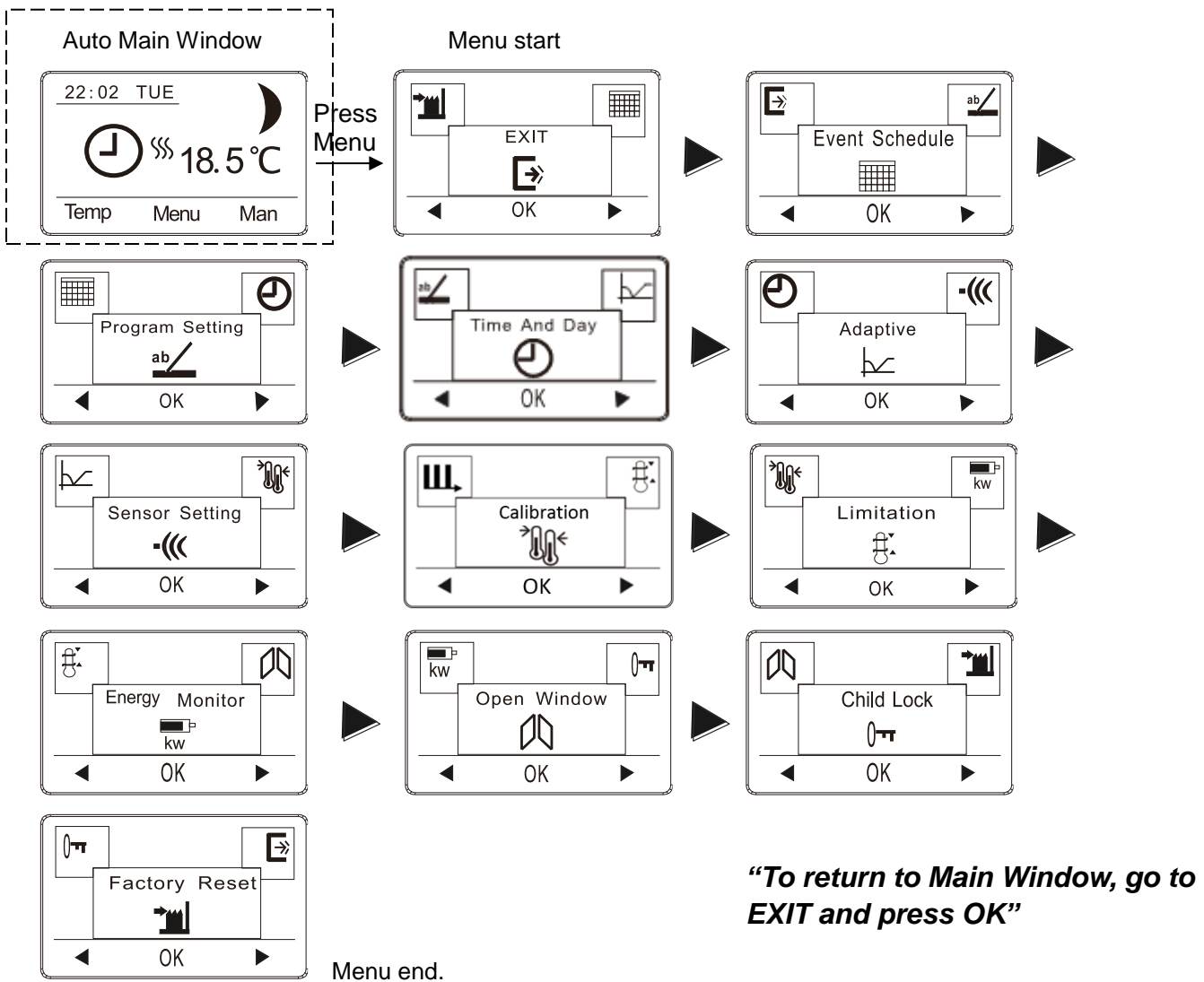Note: If no Floor Sensor has been installed There is <u>no limit</u> to the floor temperature.

Note: If load setting is not correct, only energy consumption readout in the "Energy Monitor" Menu will not show the correct consumption. All other functions will work correct and unaffected no matter the load value.

⊕ Auto mode menu.

Use the arrow buttons to run forward or backwards in the Menu sequence.

If more information to the specific menus are needed, please see Thermostat setup options page 4.

Auto Main Window   Menu start


```
22:02  TUE        🌙
  ⊕  ≋ 18.5℃
Temp   Menu   Man
```
Press Menu →

| EXIT ⮕ | ◄ OK ► |

| Event Schedule ▦ | ◄ OK ► |

| Program Setting ab╱ | ◄ OK ► |

| Time And Day ⊕ | ◄ OK ► |

| Adaptive ⌁ | ◄ OK ► |

| Sensor Setting ·(((| ◄ OK ► |

| Calibration 🌡 | ◄ OK ► |

| Limitation ⌘ | ◄ OK ► |

| Energy Monitor kw | ◄ OK ► |

| Open Window ⟰ | ◄ OK ► |

| Child Lock 0⊓ | ◄ OK ► |

| Factory Reset ⮕ | ◄ OK ► |

Menu end.

"To return to Main Window, go to EXIT and press OK"

Change All Wake and Return Temp or All Leave and Sleep Temp. in one operation.

- In Auto Main Window: Press Temp.
- Choose the events you need to change by selecting: All Wake and Return Temp or All Leave and Sleep Temp.
- Then set the desired temperature and press OK.
- Press OK to acknowledge.
- Now all temperatures in the events chosen are changes to the new temperature.

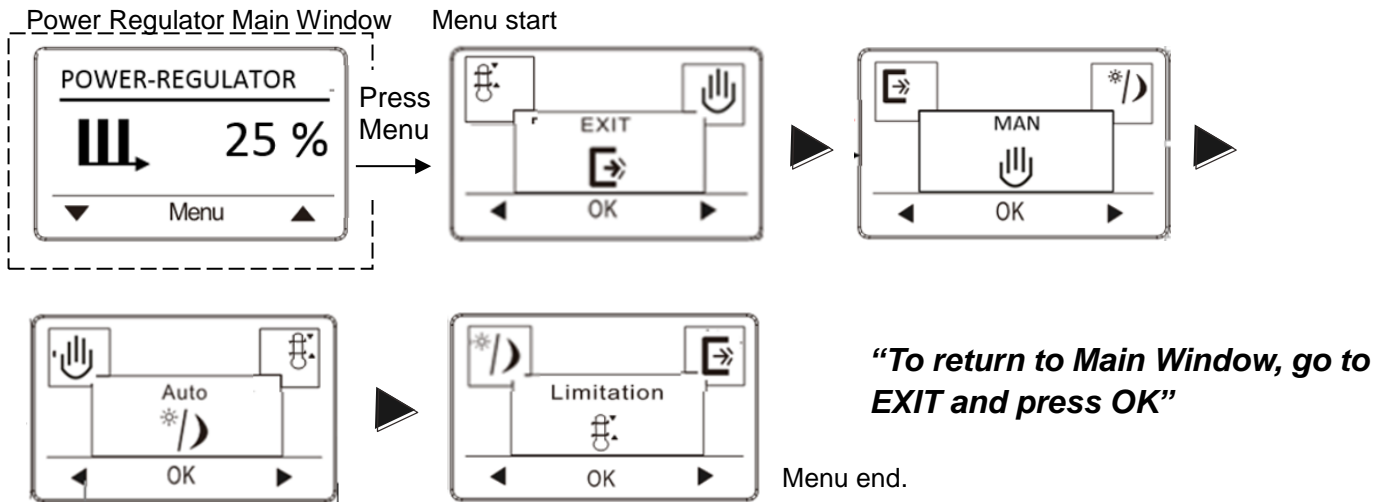# ⊕ to 🖑 Change from Auto to Man mode

- In Auto Main Window: Press Man.

Select Man to cancel the programmed Event schedule (e.g. during holidays) or to simply to control the temperature in a simple way manually. Also you may want to adjust the temperature to 5℃ for frost protection while you are away. Press Man, and Manual mode is active instantly. To return to Auto go to Auto Menu window.

⊞→ Power Regulator mode menu.

Use the arrow buttons to run forward or backwards in the Menu sequence.

If more information to the specific menus are needed, please see Thermostat setup options page 4.

Power Regulator Main Window   Menu start

POWER-REGULATOR

⊞→ 25 %

▼ Menu ▲

Press Menu

EXIT

◄ OK ►

MAN

◄ OK ►

Auto

◄ OK ►

Limitation

◄ OK ►

"To return to Main Window, go to EXIT and press OK"

Menu end.

⊞→ to ✋ Change from Power Regulator to Manual mode.

- Press Menu and roll forward til MAN menu window.
- Press OK to activate MAN mode.

⊞→ to ◷ Change from Power Regulator to Auto mode.

- Press Menu and roll forward til Auto menu window.
- Press OK to activate Auto mode. Enter hour, minute, weekday and load(if load is known).

Note: If load setting is not correct, only energy consumption readout in the "Energy Monitor" Menu will not show the correct consumption. All other functions will work correct and unaffected no matter the load value.

Thermostat setup options / Menu windows

Sensor Setting
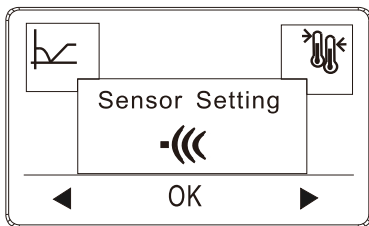
Fatory Setting	Options
Only Floor	Only Floor
	Only Room
	Room & Floor as limiter

Set the type of regular used system. There are 3 options:

Floor reg. : The thermostat regulates floor temperature only. A floor sensor must be connected.

Room reg. : The thermostat regulates room temperature only.

Room/limit: The thermostat regulates room temperature with min. and max. limits for floor temperature. A floor sensor must be connected.

Press OK and select the required heating system.

Note: If the thermostat is in the room to be heated, select Room/limit. If the thermostat is outside of the room to be heated, select Floor. Once you have chosen the required setting, press OK. You now need to select the actual sensor setting so that the thermostat can take this into account during operation.

Auto
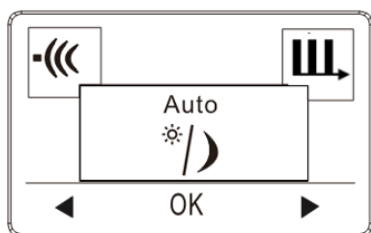
Fatory Setting	Options
CLOCK = 00:00	Set the time
WEEK = Monday	Set the weekday
LOAD = 1.0 kW	0.1 - 3.5 kW

Press OK to activate Auto mode. Then enter hour, minute, weekday and load(if load is known).

Note: If load setting is not correct, only energy consumption readout in the "Energy Monitor" Menu will not work. All other functions will work correct and unaffected no matter the load value.

Power Regulator (this is a Man only menu)
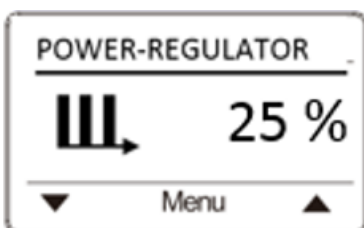
Fatory Setting	Options
50%	0 – 100%

Press OK to activate Power Regulator.

The Power Regulator run in 12-minute cycles.
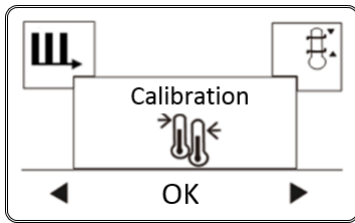
Examples:

0% = Heating on 0 of 12 min.

25% = Heating on 3 of 12 min.

50% = Heating on 6 of 12 min.

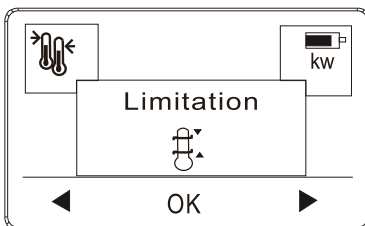*75% = Heating on 9 of 12 min.*

100% = Heating on 12 of 12 min.

6

Calibration

Fatory Setting	Options
0.0	+/- 4.0 C

If the actual measured temperature does not corresponding to the thermostat value, you can adjust the thermostat by offsetting the temperature. Press OK and enter the value of the measured temperature. Confirm with OK.
Range -4℃～4℃, Default 0℃.

Limitation

Sensor setting	Factory Setting	Settings
Only Floor	Floor sensor limit MAX SET TEMP = 40 C	20-40 C
	Floor sensor limit MIN SET TEMP = 5 C	5-20 C
Only Room	Room sensor limit MAX SET TEMP = 40 C	20-40 C
	Room sensor limit MIN SET TEMP = 5 C	5-20 C
Room & Floor	Room sensor limit MAX SET TEMP = 40 C	20-40 C
	Room sensor limit MIN SET TEMP = 5 C	5-20 C
	Floor sensor LIMIT FLOOR TEMP TO MAX = 27 C	20-40 C
	Floor sensor LIMIT FLOOR TEMP TO Min = 5 C	5-20 C

Allows you to set the temperature range within which the thermostat can be set. It is then only possible to set a temperature in this range in auto and manual mode.
Press OK to highlight Min temperature. Use the up or down button to select the minimum permissible temperature. Press OK and select the maximum permissible temperature. Confirm the settings with OK.

Energy Monitor
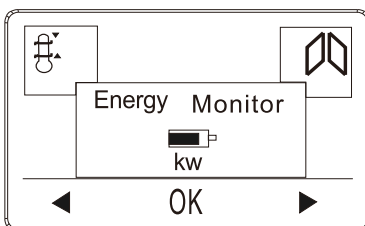
Fatory Setting	Options
ENERGY, choose period	Read out the energy used for period
LOAD = 1.0 kW	Insert heating element load: 0.1 - 3.5 kW

If load setting is not correct, only energy consumption readout in the "Energy Monitor" Menu will not show the correct consumption. All other functions will work correct and unaffected no matter the load value.
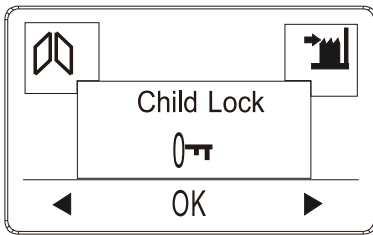Energy monitor makes you monitor each day of the week, or a full week.

Open Window
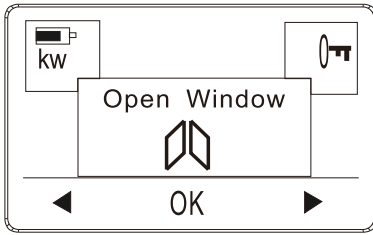
Fatory Setting	Options
No	Yes or No

Allows all the settings to Open Window；Press YES enable Open Window Features; Press NO disable Open Window. With Open Window activated, a rapid temperature decrease in the room, will shut down the heat for 30 min.
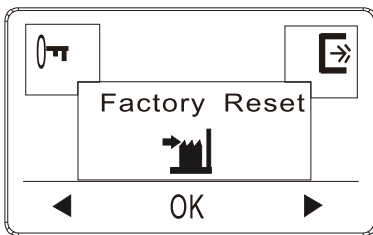
Child Lock

Fatory Setting	Options
No	Yes or No

Allows you to lock the thermostat settings if you do not want the settings to be changed or something. Press OK and select YES or NO to set up the child lock. Confirm with OK. The child lock can be unlocked by pressing two side buttons simultaneously for 5 seconds.
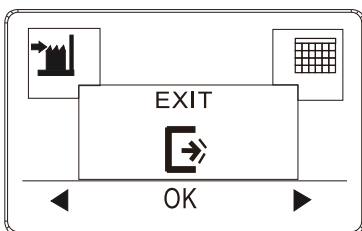
Factory Reset

Fatory Setting	Options
-	Yes = return to Factory setttings
-	No = No change

Allows all the settings to be reset to Factory Settings. Your personal settings will be erased.
Press YES and choose Reset in the menu.
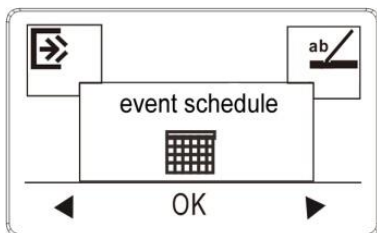Press NO and cancel the factory reset.

Exit

Fatory Setting	Options
-	OK = return to main display

Press OK in EXIT menu - Menus are closed and the thermostat returns to the main window.

Event schedule (this is an Auto only menu)

Fatory Setting	Settings
Daily program (7)	Daily program (7)
	Weekday and weekend (2)
	All week program (1)

7: Allows you to choose individual programs for each day of a week.
4 events- wake, leave, return, sleep for each day.

2: Monday to Friday with the same events setting and Saturday and Sunday with the same setting. Typically used if you work from Monday to Friday.
4 events- wake, leave, return, sleep for Monday to Friday, 2 events- wake, sleep for Saturday and Sunday

1: 7 days of a week programs respectively.
2 events- wake, sleep for each day

Program Setting: (this is an Auto only menu)
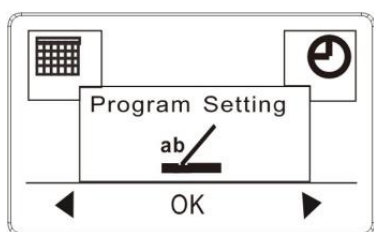
Fatory Setting	Settings
See Table below 1	Possible to change clock and temperature in all events

1. Press the OK button to activate the Program setting.
2. Choose the days for which you want to change the Settings, Mon-Fri or Sat-Sun using the up or down Button. Press OK.
3. Now select the time and temperature for each daily event in the program. Press OK and set the start time for the event concerned. Confirm with OK. Set the temperature for this event and confirm with OK.
4. After setting the required events, select Exit in the menu to return to the initial display.

(Each icon for events programming ☀Wake, 🏠Leave, 🏠Return, ☾Sleep)

7:

7 days	☀Wake		🏠Leave		🏠Return		☾Sleep	
	Time	Temp.	Time	Temp.	Time	Temp.	Time	Temp.
4 events	6:30	22℃	7:30	19℃	17:00	22℃	23:00	18℃

2:

Monday to Friday	☀Wake		🏠Leave		🏠Return		☾Sleep	
	Time	Temp.	Time	Temp.	Time	Temp.	Time	Temp.

4 events	6:30	22℃	7:30	19℃	17:00	22℃	23:00	18℃

Saturday & Sunday	☀ Wake		🌙 Sleep	
	Time	Temp.	Time	Temp.
2 events	6:30	22℃	23:00	18℃

1：

7 days	☀ Wake		🌙 Sleep	
	Time	Temp.	Time	Temp.
2 events	6:30	22℃	23:00	18℃

Time and Day (this is an Auto only menu)
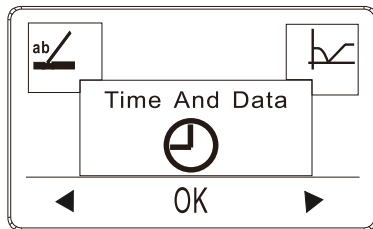
Fatory Setting	Settings
CLOCK = 00:00	Set the time
WEEK = Monday	Set the weekday

Press OK and set the actual time in hours and minutes. The day will then be displayed. Set the day and confirm with OK.

Adaptive (this is an Auto only menu)
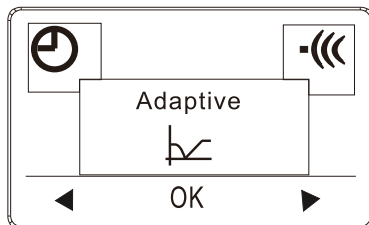
| Fatory Setting	Settings
Off	On or Off

It is ensure that the required temperature has already been reached when you get up in the morning or come home from work. After just a few days, according to your habit, the adaptive function will be able to reach the temperatures according the the event-setting.

Error alert
If a fault or an error occurs, the thermostat will display an error code as follows:
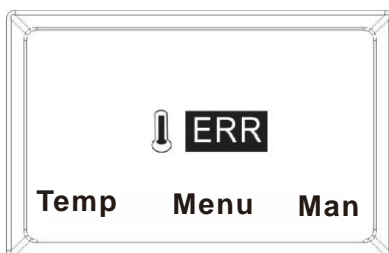
E1: Internal sensor
defective or short- circuited.
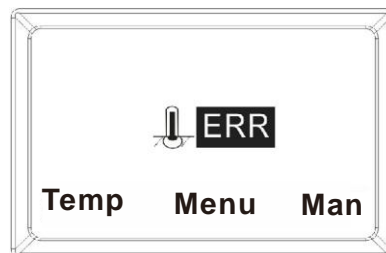
E2: External sensor
defective or short- circuited.

10

Installation-Instructions

Positioning, installation and connection

If the thermostat is <u>not</u> in the room to be heated, the Floor sensor must be installed in the floor of the heated room.

<u>Position and connection of floor sensor</u>

Position of floor sensor in the room.

Position the floor sensor about 0.5 m from the wall.

Position the floor sensor near the Thermostat. This gives the simplest installation.

If desired, the floor sensor cable can be extended. Optional extension of floor sensor cable, use ordinary doorbell cable to extend the

floor sensor cable. Maximum extension 9m.

Position of floor sensor in floor.

Position the floor sensor in a pipe approximately half-way between two heating cables.

If necessary, the sensor may be placed in a grouting gap, without the use of I pipe.

Note: When positioning in a grouting gap, any regrouting should be undertaken with care in order not to damage the sensor.

Connection of floor sensor.

Connect the floor sensor to the thermostat as shown on the diagram.

<u>Position and mounting</u>

Important! The thermostat must not be covered.

- ✓ If the Floor sensor is used, any thermostat position may be used.
- ✓ If the Room sensor or combined Room and Floor sensor are used, the thermostat must be positioned approximately 1.2 m above the floor.

Avoid:

- ✓ Heat from radiators, wood-burning stoves and other heaters
- ✓ Cold outer walls
- ✓ Concealed pipes or chimneys which give off heat
- ✓ Direct sunlight or positioning behind curtains

Installation can be carried out in two different ways:

- ✓ Flush-mounted in the wall
- ✓ Surface-mounted on the wall

<u>Selection of installation box for flush mounting</u>

For walls of wood, plasterboard etc, use flush-mounting box intended for this use.

For walls of brick, concrete etc., use flush-mounting box intended for this use.

<u>Selection of installation box for surface mounting</u>

When mounting on the surface of a wall, use surface-mounting box.

<u>Installation and connection</u>

Remove the front cover from the display by inserting a small screwdriver in the square hole on the left and the right side of the cover. Carefully lift the front cover outwards. Then remove the frame.
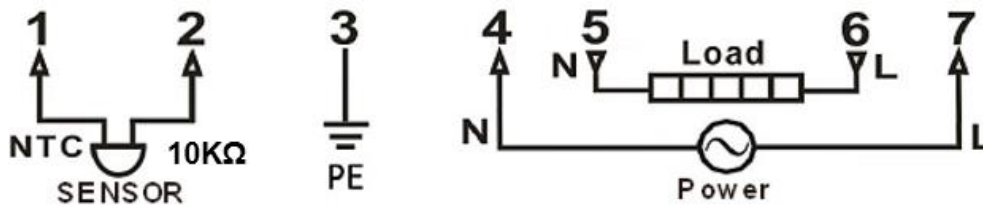
Connect wires and sensors in accordance with the diagram.

Connection must be made by an authorised electrician.

Important! Always read and follow the instructions for the Underfloor Heating System installed before connecting and turning on the heat.

Replace the frame and press on the cover. Activate the lock with a click.

Wiring diagram

Appearance reference

Display interface

Navigation buttons