INSTALLATION
&
USER GUIDE
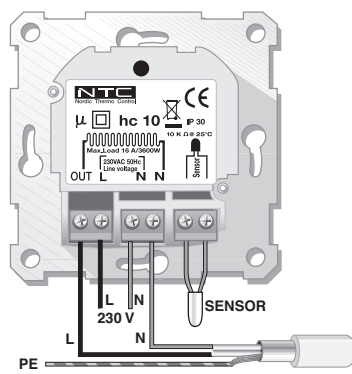## Electronic control

Fig. 1 Startup view

Fig. 2 Rev. 1.1

Fig. 3 Connections

L / N: Mains 230-240VAC connection
OUT / N: Heating cable connection
Sensor: Floor sensor connection

Technical data:

Voltage:	230-240VAC
Frequency:	50-60Hz
Resistive load:	16A (3600W-230VAC)
Inductive load:	1A
Ingress protection:	IP30
Adjustment:	PWM
Temperature range:	5°C to 40°C
Tolerance sensor:	±1.5°C @ 10-30°C
Signal sensors:	Room, Floor, Combined
Revision:	Rev. 1.1
Sensor type:	NTC 10 kΩ @ 25°C
Terminals:	1.5mm² – 4.0mm²

Apply to CE Directive:
• 89/336
• 73/23

Apply to:
• EN 60730-1
• EN60730-2-9
• RoHS

User instructions for hc10 with Quickstart.
Digital thermostat with Quickstart (see figs. 1 and 2).
The sections relating to Quickstart do not match previous versions of hc10 instructions.

Fig. 1. Thermostats with Quickstart will show 21°C on the display the first time they are connected or after resetting.

Fig. 2. Thermostats with Quickstart can also be recognised by the label:
Rev. 1.1 on the side of the thermostat.

A) What hc10 does
✓ hc10 is a digital thermostat for precise control of electric underfloor heating.
✓ hc10 starts automatically in Quickstart
✓ hc10 can also perform night and day setback

B) IMPORTANT!
Before connecting the underfloor heating
✓ To ensure optimum service life of the underfloor heating, the material in which the heating system is cast must be allowed to dry for a minimum of 28 days before switching on the heat.
✓ Connection of hc10 must be carried out by an authorised electrician
✓ hc10 must not be covered over

C) Programs in hc10
C.1) Quickstart
✓ Switch on and the underfloor heating will start up.
✓ The temperature is set to 21°C
➲ The temperature can be altered with [▼] and [▲]
✳ The display shows the set temperature
✓ The floor sensor will automatically start operation

C.2) Night and day setback
✓ The night and day setback program controls the temperature for a week at a time. Low temperature at night and during working hours, normal temperature at morning and evening.
✓ The temperature and times set at the factory can easily be altered to meet your own needs.
✓ Night and day setback ensures minimum power consumption. With optimum adjustment of the underfloor heating the average temperature can be dropped by up to 3°C, giving potential power savings of up to 15%. The savings will naturally depend on the circumstances and on what you want from the underfloor heating.

D) Floor and room sensors
Two sensors, a floor sensor and a room sensor provide hc10 with feedback on the current temperature in the room or the floor. The feedback from the sensors is necessary to maintain the desired temperature in the room.
The sensors can be used separately or together.
✓ Floor sensor (FL)
✓ Room sensor (RO)
✓ Combined use of room and floor sensor (CO). In (CO) setting, the room sensor controls the room temperature, while the floor temperature*) is simultaneously monitored by the floor sensor. The hc10 monitor is set to a desired minimum temperature and a desired maximum temperature. The factory settings are 27 and 15°C respectively. (CO) should be selected when heating is installed under a timber floor.
*) Temperature measured by floor sensor.

E) Hc10 backup battery
hc10 is equipped with a battery ensuring around 100 hours' backup.
If the power has failed and the backup battery is active, the display will show OFF.
If Heat Control has been without power for more than around 100 hours, the backup battery will be empty.
When the power returns again, hc10 will start up with the factory settings.
Any changes made to the programs will be lost.

1) Important! Programming the hc10 – start here!

Important! Start here, by setting the clock and day of the week.
- ➲ Press [P] and acknowledge with [OK]
- ✳ The hours on the time display will flash
- ➲ Use [▼] or [▲] to set the hour figure.
- ➲ Press [🕐]
- ✳ The minutes on the time display will flash
- ➲ Use [▼] or [▲] to set the minute figure
- ➲ Press [🕐]
- ✳ WORKDAY 1 will flash
- ➲ Use [▼] or [▲] to set the day of the week. Workday1 = Monday, workday 2 = Tuesday etc.
- ➲ Confirm by pressing [OK]

2) Setting the functions and altering the programs

<u>2.1) Set hc10 to floor sensor</u>
- ➲ Press [👤] for approx. 4 secs.
- ✳ (FL), (RO) or (CO) will flash on the display
- ➲ Press one of the arrow keys [▼] or [▲] until (FL) shows on the display
- ➲ Confirm by pressing [OK]

The underfloor heating will now be controlled by the signal from the floor sensor. The display will show the temperature the floor will reach.
Note: The temperature shown on the display will typically be lower than the room temperature.

<u>2.2) Setting hc10 to room sensor</u>
The use of room sensor is recommended if there is no floor sensor in the floor.
- ➲ Press [👤] for approx. 4 secs
- ✳ (FL), (RO) or (CO) will flash on the display
- ➲ Press one of the arrow keys [▼] or [▲] until (RO) shows on the display
- ➲ Confirm by pressing [OK]

The underfloor heating will now be controlled by the signal from the room sensor. The display will show the temperature the air in the room will reach.

<u>2.3) Setting hc10 to combined room and floor sensor</u>
Note: This setting is used when using the heating under a timber floor
- ➲ Press [👤] for approx. 4 secs
- ✳ (FL), (RO) or (CO) will flash on the display
- ➲ Press one of the arrow keys [▼] or [▲] until (CO) shows on the display
- ➲ Confirm by pressing [OK]

The thermostat is now set to combined floor and room sensor.
The choice of combined room and floor sensor activates monitoring of the temperature in the floor. Temperature monitoring is set at the factory to max. +27°C and min. +15°C.
By using the floor sensor, hc10 will now ensure that the floor temperature*) is never higher than + 27°C nor lower than + 15°C. These values can be adjusted as desired.
*) Temperature measured by floor sensor.
Limiting the maximum temperature in the floor is important when the heating is installed under a timber floor. Leading suppliers of timber floors prescribe a maximum temperature of 27°C on the surface of their floors.
Find out what the supplier of your timber floor recommends. Set the maximum value to the prescribed temperature.

3) Setting hc10 to operate night and day setback.
- ➲ Press [P]
- ✳ PROGRAM will flash
- ➲ Press [OK]
hc10 will now operate night and day setback

4) Night and day setback, factory-set program/time zone
hc10 divides workdays, Monday to Friday, into four time zones.
The weekend days, Saturday and Sunday, are also divided into 4 time zones.

For each time zone the starting time and temperature are determined. Start times and temperatures are set at the factory, but can be changed as required. The factory setting is shown in Table 1.
The eight times zones in all are called program 1, 2 etc. up to program 8.

Table 1: Factory setting for night and day setback

WORKDAYs

Program-Time zone	Time	Temperature
1	05:00 – 08:30	22°C
2	08:30 – 15:00	18°C
3	15:00 – 22:00	22°C
4	22:00 – 05:00	18°C

WEEKEND days

Program-Time zone	Time	Temperature
5	07:00 – 09:00	22°C
6	09:00 – 14:00	20°C
7	14:00 – 23:00	22°C
8	23:00 – 07:00	18°C

Times and temperatures can be changed as required. See section, Altering factory-set times and temperatures.

4.1) Changing time settings for night and day setback
➲ Press [P] followed by [▼] or [▲] to the program you wish to change; the display will flash
➲ Press [🕐]
✳ The hours on the time display will flash
➲ Use [▼] or [▲] to set the hour figure
➲ Press [🕐]
✳ The minutes on the time display will flash
➲ Use [▼] or [▲] to set the minute figure
➲ Press [OK]
✳ The selected PROGRAM will flash
➲ Use [▼] or [▲] to select the program you wish to change next
   or
➲ Exit by pressing [OK] for 2 seconds

4.2) Changing temperature settings for night and day setback
➲ Press [P]
✳ PROGRAM will flash
➲ Press [▼] or [▲] to the program you wish to change; the display will flash.
➲ Press [🌡]
✳ The temperature will flash
➲ Use [▼] or [▲] to set the temperature
➲ Press [OK]
✳ The selected PROGRAM will flash
➲ Use [▼] or [▲] to select the program you wish to change next
   or
➲ Exit by pressing [OK] for 2 seconds

4.3) Deactivating or activating program/time zone in night and day setback
Programs/time zones in the night and day setback program can be deactivated or activated as required.

<u>4.4) Deactivating program/time zone</u>
- ➲ Press [P]
- ✳ PROGRAM will flash
- ➲ Press [▼] or [▲] until you get to the program you wish to deactivate; the display will flash
- ➲ Press [⬍]
- ✳ The temperature will flash
- ➲ Press [🕐]
- ✳ PROGRAM will flash
- ➲ Press [OK]

The selected program-time zone has been deactivated

<u>4.5) Activating program/time zone</u>
- ➲ Press [P]
- ✳ PROGRAM will flash
- ➲ Press [▼] or [▲] until you get to the program you wish to activate; the display will flash.
- ➲ Press [⬍]
- ✳ Lines will flash
- ➲ Press [🕐]
- ✳ PROGRAM will flash
- ➲ Press [OK]

The selected program-time zone has been activated

5) Changing max. and min. limits for monitoring floor temperature
This function is only active, if 10hc has been selected to operate with combined room and floor sensor (CO)
Changing the factory-set values of max. 27°C and min. 15°C
- ➲ Press [P]
- ✳ PROGRAM will flash
- ➲ Press [▼] or [▲] until program H or L flashes on the display
- ➲ Press [⬍]
- ✳ The temperature will flash
- ➲ Use [▼] or [▲] to set the temperature.
- ➲ Press [OK]
- ✳ The selected PROGRAM will flash
- ➲ Use [▼] or [▲] to select the program which you now wish to change
  or
- ➲ Exit by pressing [OK] for 2 seconds

6) Changing from Quickstart to Night and day setback
Change from Quickstart program to Night and day setback program
- ➲ Press [P]
- ✳ PROGRAM will flash
- ➲ Press [OK]

hc10 will now operate night and day setback
The previously set times and temperatures in Night and day setback are saved.

7) Changing from Night and day setback to Quickstart
Change from Night and day setback program to Quickstart program
- ➲ Press [⬍]
- ✳ FL: - - flashes
- ➲ Press [OK]

hc10 will now operate with Quickstart.
The previously set times and temperatures in Night and day setback are not deleted on changing to Quickstart.

8) Switching between display of actual room temperature and desired temperature
- ➲ Simultaneously press [⬍]+[OK]. Hold them in for min. 3 seconds
- ✳ This will switch the display between actual and desired room temperature

Switch back in the same way.
- ➲ Simultaneously press [⬍]+[OK]. Hold them in for min. 3 seconds
- ✳ The display will switch back again.

8

9) Read out present floor temperature
Applicable only when floor sensor is connected.
➲ Press [⬇]
✳ Present temperature is shown in the display for 10 sek. I.e. FL :22

10) Switching between display of 24 hour clock and am/pm format.
➲ Press [🕐] and hold it in. While holding in [🕐] , press [OK]. This will switch between 24 hour clock and am/pm.

11) Turning hc10 on and off
➲ Press [▼] and [▲] simultaneously.
hc10 will turn off
➲ Press any key to turn hc10 on again

12) Resetting hc10
This procedure will return Heat Control 10 to Quickstart. Any changed values in night and day setback will be lost.
➲ Press simultaneously [P][⬇][▼][▲]
✳ The display will go out and then everything will turn on again
hc10 has now been reset.

F) Position, installation and connection
F.1) Position and connection of floor sensor
Position of floor sensor in the room.
Position the floor sensor about 0.5 m from the wall.
Position the floor sensor near the hc10. 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 on 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 cables.
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 hc10 as shown on the diagram.

F.2) Position and mounting of hc10
Important! hc10 must not be covered.
✓ If the floor sensor (FL) is used, any position may be used.
✓ If the room sensor (RO) or combined room and floor sensor (CO) are used, hc10 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

Selection of installation box for flush mounting
For walls of wood, plasterboard etc, use flush-mounting box (53000003)
For walls of brick, concrete etc., use flush-mounting box (53000002)

Selection of installation box for surface mounting
When mounting on the surface of a wall, use surface-mounting box (53000001).

<u>Installation and connection of hc10</u>
Remove the front cover from the display by inserting a small screwdriver in the square hole on top of the thermostat. At the same time, carefully lift the front cover outwards. Then remove the frame.

Connect wires and sensors to hc10 in accordance with the diagram.
Connection must be made by an authorised electrician.
Important! See section, Starting up underfloor heating with hc10, before turning on the power.

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

13) Floor sensor status
➲ Press [🛈]
✳ FL : - -, sensor not connected, broken or short-circuited
✳ FL : HI, other errors