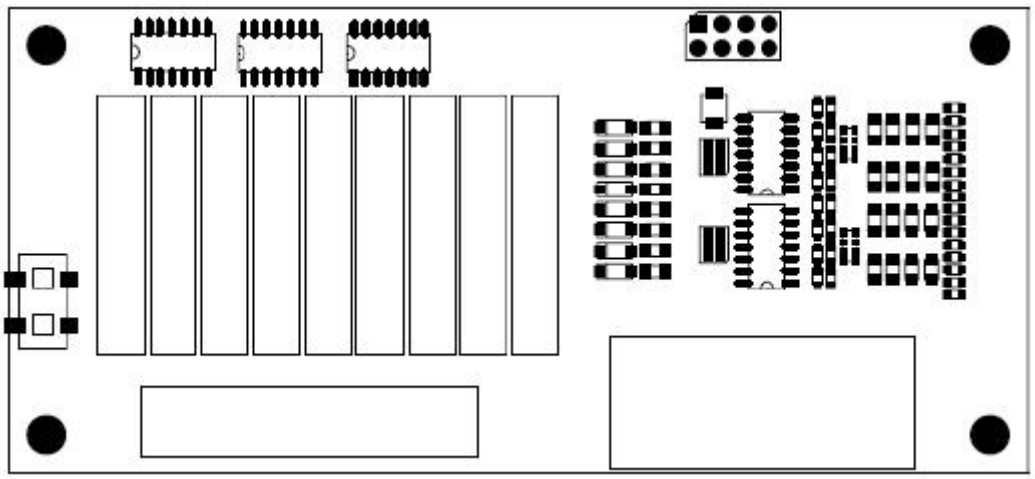
# Operating Manual

UK

# COMFORT BOARD 2.0

## Accessories for heating and heat pump regulator



We reserve the right to modify technical specifications without prior notice.
83052500cUK – Translation of the original instruction manual

# Please read first

This operating manual provides important information on the handling of the unit. It is an integral part of the product and must be stored so that it is accessible in the immediate vicinity of the unit. It must remain available throughout the entire service life of the unit. It must be handed over to subsequent owners or operators of the unit.

**In addition to this operating manual, the operating manual for the heating and heat pump regulator and the operating manual for your heat pump must also be available.**

Read the operating manual before working on or operating the unit. This applies in particular to the chapter on safety. Always follow all instructions completely and without restrictions.

It is possible that this operating manual may contain instructions that seem incomprehensible or unclear. In case of questions or uncertainty, contact the factory customer service department or the manufacturer's local service partner.

Since this operating manual was written for several different models of the unit, always comply with the parameters for the respective model.

This operating manual is intended only for persons assigned to work on or operate the unit. Treat all constituent parts confidentially. The information contained herein is protected by copyright. No part of this information may be reproduced, transmitted, copied, stored in electronic data systems or translated into another language, either wholly or in part, without the express written permission of the manufacturer.

# Symbols

The following symbols are used in the operating manual. They have the following meaning:

Information for operators.

Information or instructions for qualified technicians.

**DANGER!**
**Indicates a direct impending danger resulting in severe injuries or death.**

**WARNING!**
**Indicates a possibly dangerous situation that could result in severe injuries or death.**

**CAUTION!**
**Indicates a possibly dangerous situation that could result in medium or light injuries.**

**CAUTION**
Indicates a possibly dangerous situation, which could result in property damage.

**NOTICE**
Emphasized information.

Users and qualified technicians can set data

Authorized fitter can set data; password required

Authorised service personnel can set data. Access via USB Stick only.

Factory pre-setting, no data change possible

Reference to other sections of the operating manual.

Reference to other instructions of the manufacturer.



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# Content

# Intended use

The Comfort board 2.0 is an accessory for the heating and heat pump regulator. The Comfort board 2.0 can be used in combination with the heating and heat pump regulator and suitable heat pumps in newly installed or existing heating systems.

**The Comfort board 2.0 expands the range of functions of the heating and heat pump regulator** and may be used only as intended in suitable heat pump systems. This means:

- for controlling either a photovoltaic system or a swimming pool heater.
- for controlling an additional heat generator (=2hg 3).
- for controlling a second and third mixing circuit or the Comfort cooling.
- for temperature difference regulation (for example for a solar installation).
- for supplying external power sources.

The unit may be operated only within its technical parameters.

**! CAUTION**
The Comfort board 2.0 may be operated only in combination with the heating and heat pump regulator and with the heat pumps approved by the manufacturer and accessories approved by the manufacturer.

# Exclusion of liability

The manufacturer will not be liable for damage resulting from unauthorized use of the unit.

The manufacturer's liability will also be voided in the following cases:

- if work is performed on the unit and its components in a manner that does not comply with the terms of this operating manual;
- if work is performed on the unit and its components in an improper manner;
- if work is performed on the unit that is not described in this operating manual, and this work was not expressly approved in writing by the manufacturer;
- if the unit or components in the unit are modified, redesigned or removed without the express written permission of the manufacturer.

# Safety

The unit is operationally safe when used for the intended purpose. The construction and design of the unit conform to the state of the art, all relevant DIN/VDE regulations and all relevant safety regulations.

Every person who performs work on the unit must have read and understood the operating manual prior to starting any work. This also applies if the respective person has already worked with such a unit or a similar unit or has been trained by the manufacturer.

Every person who performs work on the unit must comply with the applicable accident prevention and safety regulations. This applies in particular to the wearing of personal safety gear.

**DANGER!**
**Observe the relevant EN, VDE and/or applicable local safety regulations during the installation and during all electrical work.**

**Comply with technical connection requirements of the responsible power supply company, if required by the latter!**

**DANGER!**
**Unit operates under high electric voltage!**

**DANGER!**
**Danger of fatal injury due to electric current!**
**Electrical connections may be installed only by qualified electricians.**

**Before opening the unit, disconnect the system from the power supply and secure it from being switched back on!**

**DANGER!**
**Only qualified technicians (trained heating, cooling, refrigerant and electrical technicians) may perform work on the unit and its components.**

**! CAUTION**
Adjustments to the heating and heat pump regulator may be performed only by the authorized customer service personnel and by specialized firms authorized by the manufacturer.



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**WARNING!**
**Observe safety labels in the unit.**

**CAUTION**
For safety reasons: Do not disconnect the unit from the power supply, unless the unit is being opened.

**CAUTION**
Plug X5 and screw terminals X4 of the heating and heat pump regulator are under low voltage. Use only original sensors from the manufacturer (protection class II).

**CAUTION**
Circulating pumps may be controlled only by the heating and heat pump regulator. Never shut off circulating pumps externally.

**CAUTION**
Never shut off heating circuit to the heat pump (frost protection).

**CAUTION**
Use only accessories provided by or approved by the manufacturer.

# Maintenance of the unit

The Comfort board 2.0 requires no regular maintenance.

# Malfunctions

In the event of a malfunction, you can detect the cause of the malfunction via the diagnostic program of the heating and heat pump regulator.

Operating manual for the heating and heat pump regulator.

**CAUTION**
Service and repair work on the components of the unit may be performed only by customer service personnel authorized by the manufacturer.

# Customer service

For technical assistance, please contact your qualified technician or the manufacturer's local service partner.

Operating manual for your heat pump, "Customer Service" section.

# Warranty / Guarantee

For warranty and guarantee conditions, please refer to the purchase documents.

**NOTICE**
Please contact your dealer concerning warranties and guarantees.

# Disposal

When decommissioning the unit, always comply with applicable laws, directives and standards for the recovery, recycling and disposal of materials and components.

Operating manual for the heating and heat pump regulator, "Dismantling" chapter.

# Scope of delivery


Extra box Comfort board 2.0:
1 x Comfort board 2.0
2 x Plugs
4 x spacer bolts + mounting screws
1 x operating manual

① Inspect delivery for outwardly visible signs of damage…

② Check to make sure that delivery is complete…
Any defects or incorrect deliveries must be claimed immediately.

# Installation

Observe the following when performing all work:

**NOTICE**
Always comply with applicable accident prevention regulations, statutory regulations, ordinances and directives.

**WARNING!**
**Only qualified technicians may assemble and install the Comfort board 2.0 of the heating and heat pump regulator.**

**CAUTION**
Inserting and removing the Comfort board 2.0 while it is energized will destroy the electronic system!

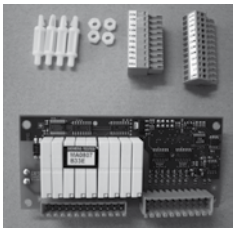
**DANGER!**
**Danger of fatal injury due to electric current!**
**Electrical connections may be installed only by qualified electricians.**
**Before opening the unit, disconnect the system from the power supply and secure it from being switched back on!**

① For the "built-in regulator", disconnect unit from power supply; for "wall regulator", switch off control fuse…

② Open housing of the heating and heat pump regulator…

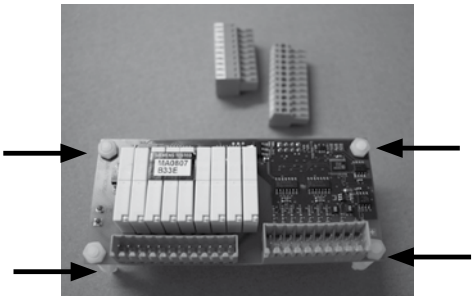
Operating manual for your heat pump (for heating and heat pump regulator integrated in unit) or operating manual for the heating and heat pump regulator (for external "wall regulator").

③ Carefully remove the Comfort board 2.0 and the included components from the package…



**CAUTION**
Touch the Comfort board 2.0 only on the electrically insulated base material. Do not touch any electronic components.

④ Unless already pre-mounted, screw the four spacer bolts into the four designated holes on the Comfort board 2.0…



Spacer bolts of the
Comfort board 2.0



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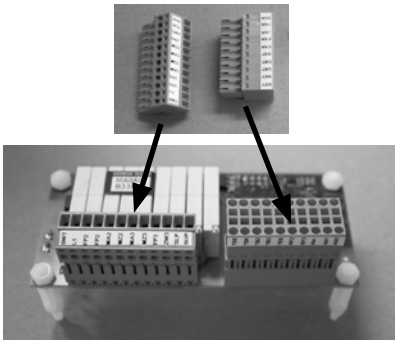
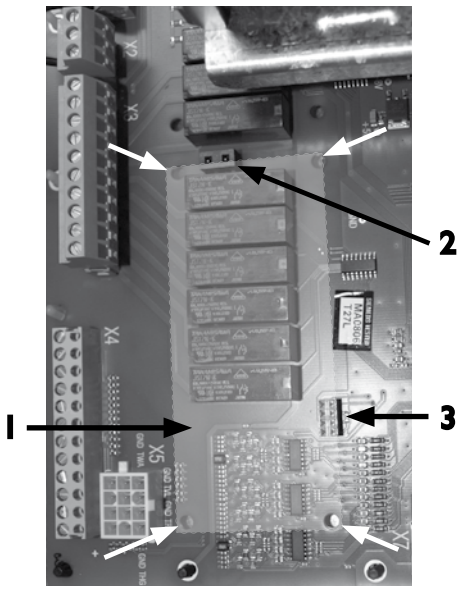
⑤ Insert the two mating plugs on the Comfort board 2.0…

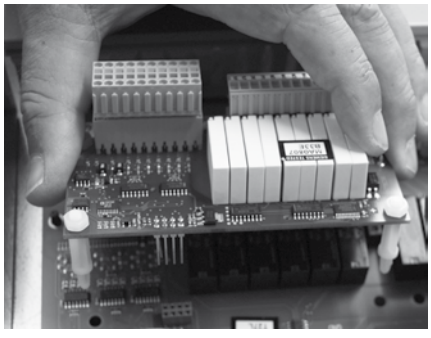


⑥ Position the completely assembled Comfort board 2.0 over the designated holes (see bright arrows) on the circuit board…




1 bright area = slot for
Comfort board 2.0
2 upper socket for the two contact pins
3 lower socket for the two
x four contact pins

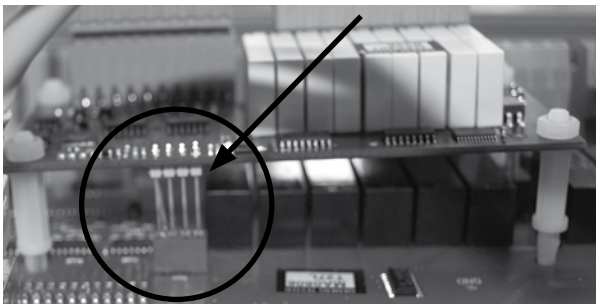
⑦ Carefully plug the Comfort board 2.0 onto the circuit board…



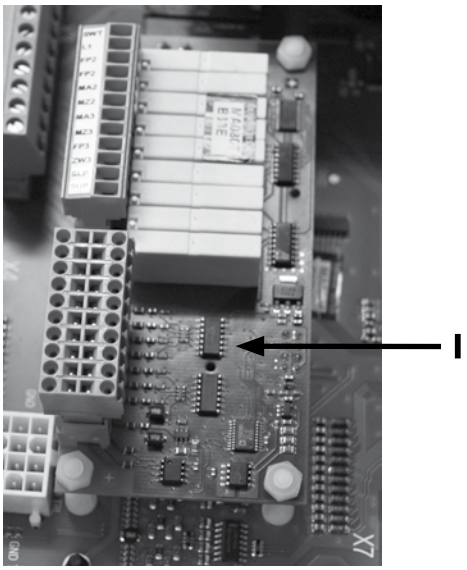
**! CAUTION**

Watch out for the correct connection of the Comfort board 2.0.
The upper (two) and lower (eight) contact pins of the Comfort board 2.0 must engage in the corresponding sockets on the circuit board.

Socket (2) for upper contact pins of the Comfort board 2.0



Socket (3) for lower contact pins of the Comfort board 2.0




1 mounted Comfort board 2.0

# Electrical connections

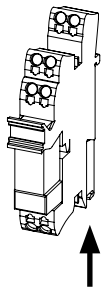
**DANGER!**
**Danger of fatal injury due to electric current!**
**Electrical connections may be installed only by qualified electricians.**
**Before opening the unit, disconnect the system from the power supply and secure it from being switched back on!**

**DANGER!**
**Observe the relevant EN, VDE and/or applicable local safety regulations during the installation and during all electrical work.**
**Comply with technical connection requirements of the responsible power supply company (if required by the latter)!**

① Install Comfort board 2.0 according to the terminal diagram and integrate in the system according to the hydraulic diagram…

page 34, "Terminal diagram"

**CAUTION**
A maximum of 5A only may be applied to the output relay of the expansion board. Due to the high start-up currents of energy-efficient circulating pumps, these may only be installed via one or more auxiliary relays (not supplied).



Install the auxiliary relay(s) according to good engineering practice.

– In case of heat pump indoor units with built-in controller:
if space is available, plug the auxiliary relay onto the top hat rail in the control box of the heat pump. Otherwise install the relay in an external housing (to be provided on site).

– In the case of heat pump outdoor units with wall-mounted controller or for connection of a dual system via the hydraulic module:
Install the relay in an external housing (to be provided on site).

**CAUTION**
For information on unit-specific connections, please refer to the operating manual for your heat pump.

② After the Comfort board 2.0 is installed on the circuit board and connected, close the housing of the heating and heat pump regulator…

③ Switch on the control fuse of the "wall regulator" or connect unit to power supply for "built-in regulator".

# Required software version

The Comfort board 2.0 is automatically activated and the corresponding functions are enabled. For this to function, however, the software version of the heating and heat pump regulator must be ≥ 1.30.

To determine the software version, see the operating manual for the heating and heat pump regulator, "Query system status" section.

# Functions of the Comfort board 2.0

**The Comfort board 2.0 expands the range of functions of the heating and heat pump regulator** and can be used for the following purposes:

- for cntrolling either a photovoltaic system or a swimming pool heater
- for controlling an additional heat generator (=2hg 3).
- for controlling a second and third mixing circuit or the Comfort cooling.
- for temperature difference regulation (for example for a solar installation).
- for supplying external power sources.
- Heat quantity measurement (accessory).
- Activation of energy efficient pumps.
- Activation of reversible air/water units.
- Active cooling.

# Program section “Swimming pool heating”

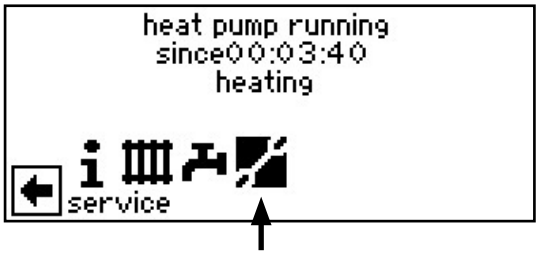
**NOTICE**
With the Comfort board 2.0 you can either control a swimming pool heating system **or** a photovoltaic system, but not both.

**NOTICE**
Swimming pool heating can be started or stopped by means of a thermostat.

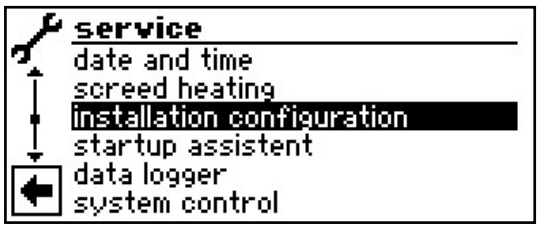
**CAUTION**
Before making software settings, it is necessary to check the hydraulic connection.

## SWITCH ON PROGRAM SECTION

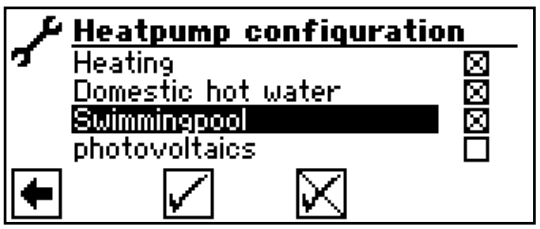
① In the navigation screen, select the symbol …




② The screen switches to the “Service” menu. Here, select the menu item “System configuration”…



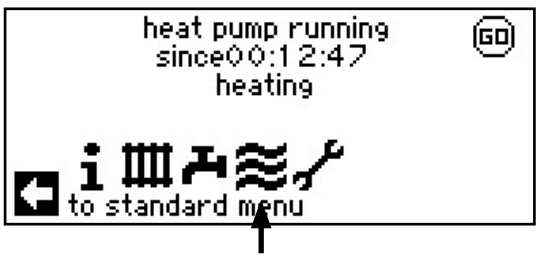

③ The screen switches to the “Installation configuration” menu. Here, select the menu item “Swimming pool” and activate by pressing the “Rotary push button”…




An “X” appears in the box following the menu item “Swimming pool”…

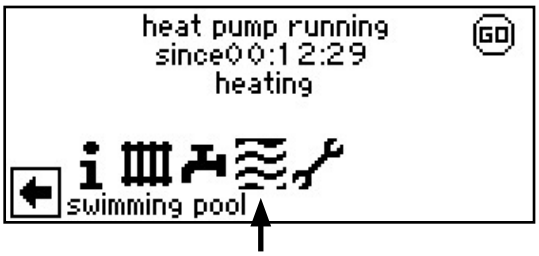
④ Save input by selecting ☑…

⑤ Then return to the navigation screen. The symbol for the program section “Swimming pool” now appears there:

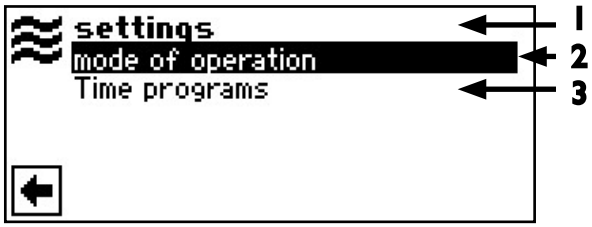


## SETTING THE OPERATING MODE FOR THE SWIMMING POOL HEATING

① In the navigation screen, select the symbol ≋ …




② The screen switches to the "Settings swimming pool heating" menu…

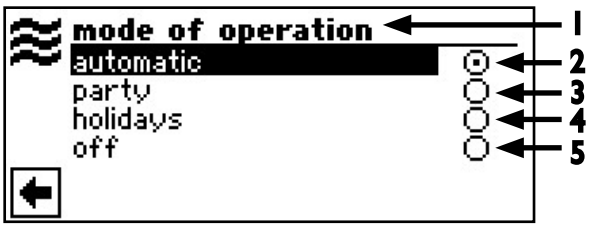



**1 Symbol for program section "Swimming pool heating" with menu title**

**2 Menu field "mode of operation"**
opens the menu "Swimming pool heating operating mode"

**3 Menu field "Time programs"**
opens the menu "Swimming pool heating times"

③ Select menu field "Operating mode". The screen switches to the "Swimming pool heating operating mode" menu. The current operating mode is marked ⦿ …



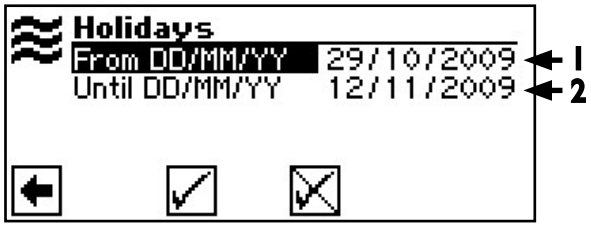

**1 Symbol for program section "Swimming pool heating" with menu title**

**2 Automatic**
Swimming pool heating operates based on programmed times: during the activated period up to the value set at the thermostat; outside of the activated period the swimming pool heating is off.

**3 Party**
Continuous activation of the swimming pool heating

**4 Holidays**
The swimming pool heating is shut off *starting immediately up until the set date or until another operating mode is manually selected.*

If operating mode "Holidays" is selected, the screen switches to the menu "Swimming pool heating holiday end":




1 Menu field "Start of holid"
2 Menu field "End of holid"

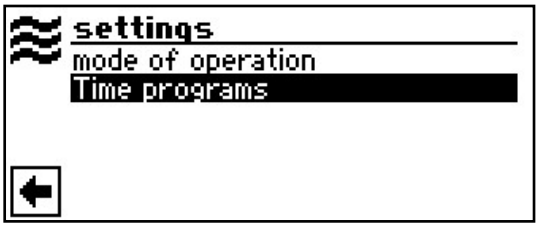
**5 Off**
The swimming pool heating is shut off.

④ Select desired operating mode…

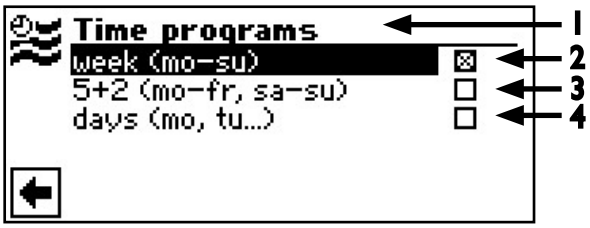
⑤ Return to menu "Settings swimming pool heating".

## SETTING THE TIMES FOR THE SWIMMING POOL HEATING

① In the menu “Settings swimming pool heating”, select the menu item “Time programs”…




② The screen switches to the “Swimming pool heating time programs” menu…




**1 Symbol for “Swimming pool heating times” with menu title**

**2 Week (Mo – Su)**
Same times for all days of the week

**3 5 + 2 (Mo – Fr, Sa – Su)**
Different times during the week and on weekends

**4 Different times for each day**

③ To set the times, follow the instructions in the operating manual for the heating and heat pump regulator…

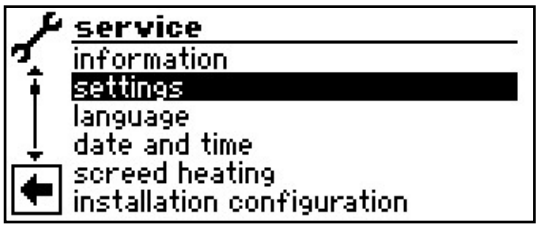
Operating manual of the heating and heat pump regulator, chapter “Setting the times for the heating circuit”.

**NOTICE**
When programming, note that the time periods that you set in the section “Swimming pool heating times” are **shut-off times**. The swimming pool heating is switched off during these periods.

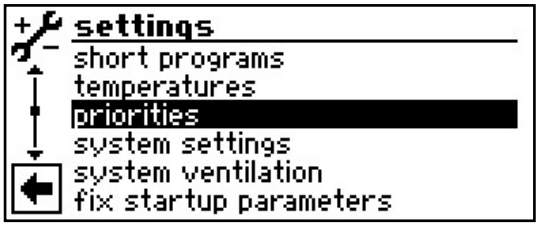
④ After entering the times, return to the navigation screen.

## DEFINE PRIORITY OF THE SWIMMING POOL HEATING

① In the “Service” menu select the menu field “Settings”…




② The screen switches to the “Service Settings” menu. Here, select the menu field “Priorities”…




③ The screen switches to the “Service Settings Priorities” menu…


**NOTICE**
Hot water – as in the example – has top priority in the factory setting. The swimming pool heating is at the bottom (= Priority 3).

④ If you wish to change the priorities of the individual program sections, first select the menu field “domestic hot water”. The corresponding priorities input field is highlighted with a dark background…

⑤ Change priority for “domestic hot water” by turning the “rotary push button”. As soon as you change the priority for “domestic hot water”, the priorities for “heating” and “swimming pool” also change automatically…

⑥ After setting the desired priority for “domestic hot water”, exit the input field by pressing the “rotary push button”…

⑦ To specify the priority of “heating” as opposed to “swimming pool”, select menu field “heating”. The corresponding priorities input field is highlighted with a dark background…

⑧ Change priority for “heating” by turning the “rotary push button”. The previously specified priority for “domestic hot water” remains; only the priorities for “heating” and “swimming pool” are changed.…

⑨ After setting the desired priority for “heating”, exit the input field by pressing the “rotary push button”…

⑩ Save input by selecting ☑…

**NOTICE**
Menu field “swimming pool” only provides information. No manual settings can be made here.

⑪ Return to menu “Service Settings”.

# Program section “Photovoltaics”

**NOTICE**
As an alternative to swimming pool heating the SWT input of the heating and heat pump controller can also be used for targeted own electricity use via photovoltaics.

**CAUTION**
Before making any settings in the software, always check the hydraulic integration.

## ELECTRICAL INTEGRATION OF THE PHOTOVOLTAIC FUNCTION

The inverter of the photovoltaic system, depending on the available photovoltaic yield, must be able to output a switching signal for external use via a multifunctional relay.

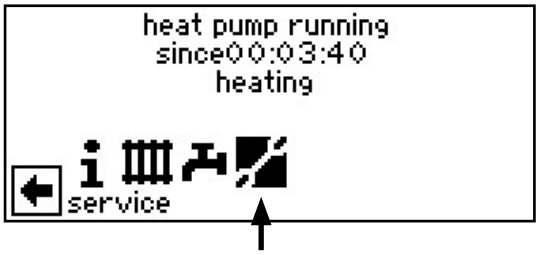
If a floating switch contact is available at the inverter, this can be used directly.

The switch signal must be applied to the expansion board at the SWT input. If the switch contact is closed, the photovoltaic function is active.

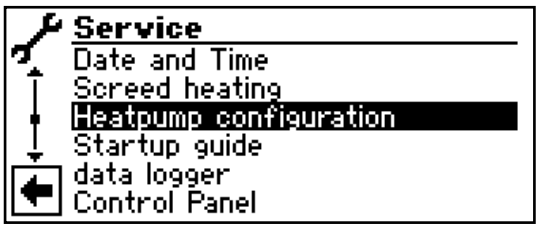
The “Photovoltaic” program section can now be switched on in the system settings.

## SWITCH ON PROGRAM SECTION

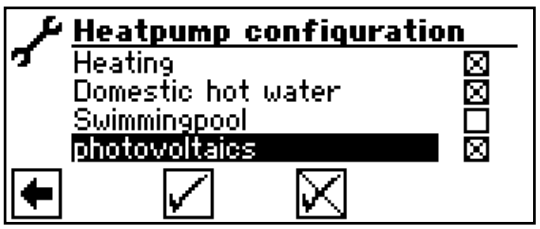
① In the navigation screen, select the symbol …




② The screen switches to the “Service” menu. Here, select the menu item “Heatpump configuration”…



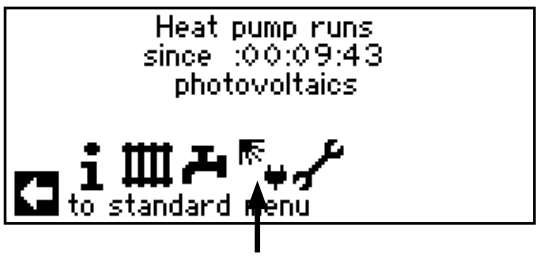

③ The screen switches to the “Heatpump configuration” menu. Here, select the menu item “Photovoltaics” and activate by pressing the “Rotary push button”…



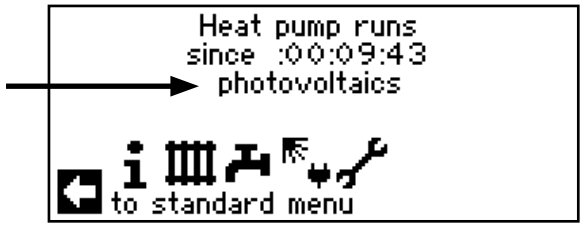

An “X” appears in the box following the menu item “Photovoltaics”…

④ Save input by selecting ☑…

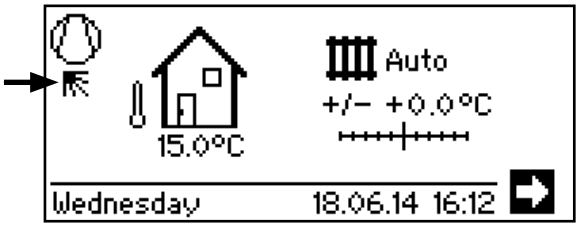
⑤ Then return to the navigation screen. The symbol for the program section “Photovoltaics” now appears there:



As soon as the system's own electricity is used either for hot water or heating water, this is displayed in the navigation screen:

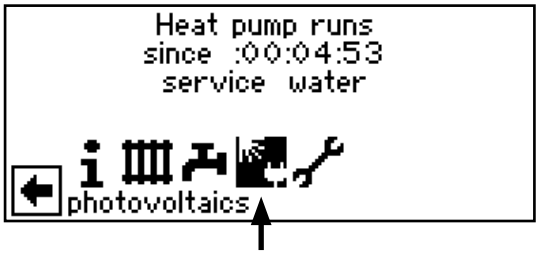



In the default screen the own electricity use is indicated by the symbol :

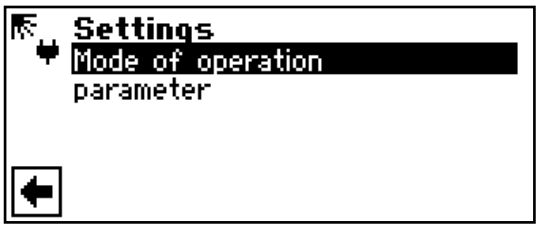



## SETTING THE OPERATING MODE FOR PHOTOVOLTAICS

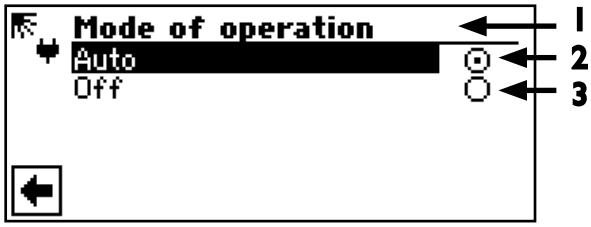
① In the navigation screen, select the symbol …




② The screen switches to the "Settings photovoltaics" menu. The menu field "Mode of operation" is provided…




③ Select "Mode of operation". The screen switches to the "Mode of operation photovoltaics" menu…




**1 Symbol for program section "Photovoltaics" with menu title**

**2 Menu item "Auto"**
If the switch contact on the SWT/PV input is closed, the photovoltaic function is switched on.

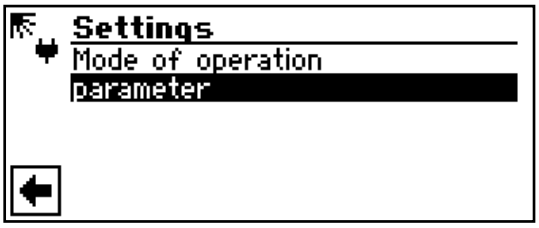
**3 Menu item "Off"**
If it is activated, the „Photovoltaic" function is switched off.

④ Select desired operating mode…

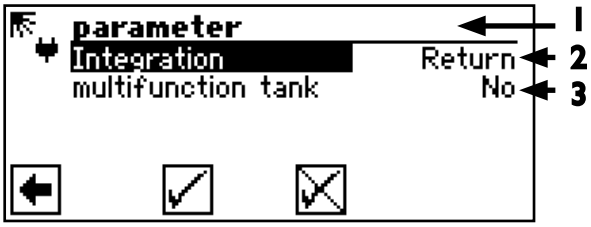
⑤ Return to menu "Settings photovoltaics".

## DEFINING THE PARAMETERS OF PHOTOVOLTAIC MODE

① In the menu “Settings photovoltaica”, select the meu item “parameter”…




② The screen switches to the “Photovoltaics parameter” menu…




**1 Symbol for “Program section photovoltaics” with menu title**

**2 Menu item “Integration”**
This menu field shows the parameters selected under “System settings”.

**3 Menu item “multifunction tank”**

*No* As soon as the heat pump controller receives a signal from the inverter via SWT, the water is heated up to the maximum flow temperature (heat pump use limit). The hot water temperature reached by then is held with the set hysteresis, as long as the signal from the inverter via SWT lasts (= SWT “On”).

*Yes* As soon as the heat pump controller receives a signal from the inverter via SWT, the system runs in heating mode until the set return limit temperature is reached.
If the system is switched off via the maximum flow temperature (heat pump use limit) before the return limit is reached, the value reached is set as the new setpoint. If the heating limit has been reached and the heat pump controller receives a signal from the inverter via SWT, the water is heated up to the maximum flow temperature. The hot water temperature reached by then is held with the set hysteresis, as long as the signal from the inverter via SWT lasts (= SWT “On”).

# Program section “Cooling”

## Comfort cooling

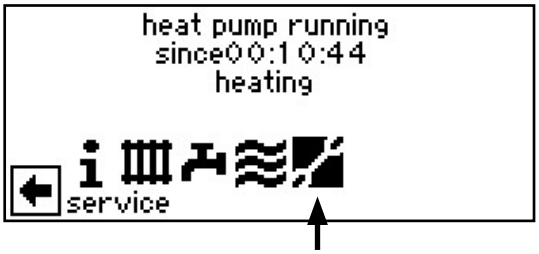
**! CAUTION**
Before making software settings, it is necessary to check the hydraulic connection.

**! CAUTION**
The use of Comfort cooling requires that you integrate a dew point sensor in the system.

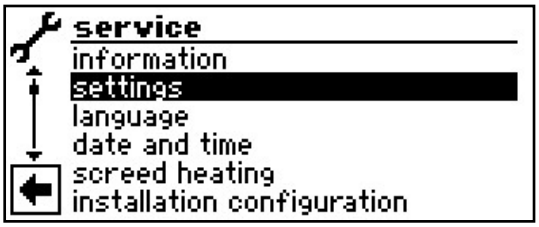
**NOTICE**
The minimum flow temperature of cooling is factory set to 18 °C. This value can be changed in the menu “Service Settings Temperatures” in the menu item “min. flow cooling”.
Value range: 5 °C – 25 °C.

### SWITCH ON PROGRAM SECTION

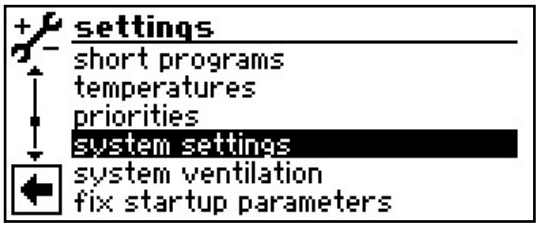
① In the navigation screen, select the symbol … 



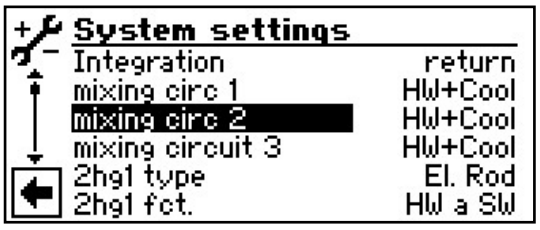

② The screen switches to the “Service” menu. Here, select the menu item “settings”…




③ Here, select the menu item “system settings”…




④ Select the menu item “mixing circ 2”…




⑤ Use the “rotary push button” to set the mixing circuit 2 to “cool” or “HW+Cool”…

- If set to “cool” the mixer is activated only when cooling.
- If set to “HW+Cool” the mixer is activated both when heating and cooling.

**NOTICE**
In combination with the Comfort board 2.0, the above settings are also possible for mixing circuit 1.

Operating manual of the heating and heat pump regulator.

⑥ Exit input field, scroll to bottom of menu and save input by selecting ☑.



We reserve the right to modify technical specifications without prior notice.
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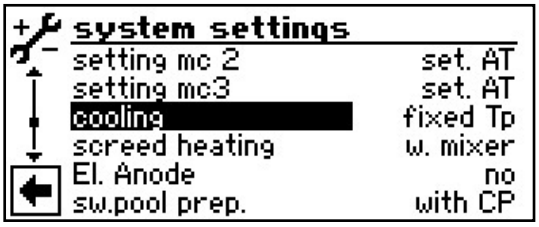
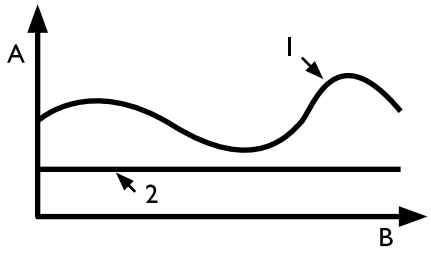
## COOLING – BASED ON SET TEMPERATURE OR DEPENDING ON OUTDOOR TEMPERATURE

Use the "System Setting" menu to specify if Comfort cooling is supposed to be regulated based on:

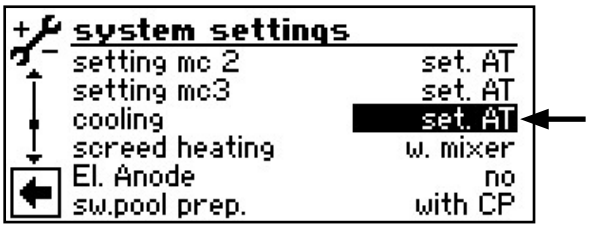



fixed Tp. = Cooling based on set temperature



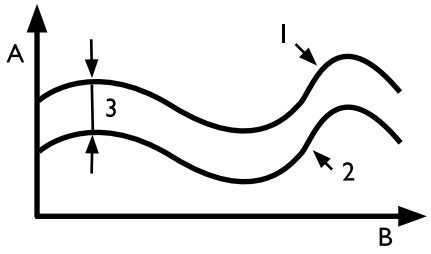

A Temperature
B Time
1 Outdoor temperature
2 Set temperature of mixing circuit

or dependent on the outdoor temperature:




The set temperatures are then ignored. Instead, set temperatures are automatically calculated based on the outdoor temperature. This calculation is based on the values entered under "Outd. T-Dif 1" and "Outd. T-Dif 2", but is limited to set temperatures of min. 16 °C and max. 25 °C (when "Separating tank" is set to: 5 °C to 25 °C)

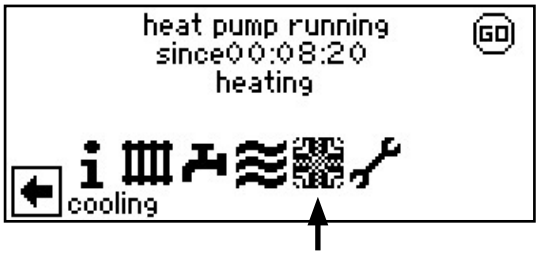
set. AT = Cooling based on outdoor temperature and set difference



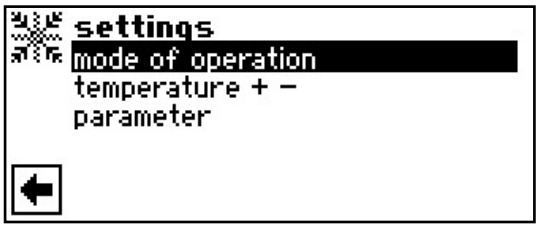

A Temperature
B Time
1 Outdoor temperature
2 Set temperature of mixing circuit
3 Outd. T-Dif

## SETTING THE OPERATING MODE

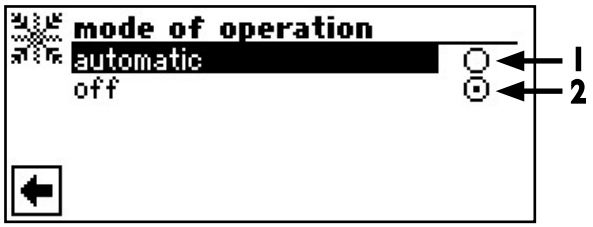
① In the navigation screen, select the symbol … 




② The screen switches to the "Comfort cooling Settings" menu. Here, select the menu item "mode of operation"…




③ The screen switches to the "Comfort cooling mode of operation" menu. Select desired operating mode…

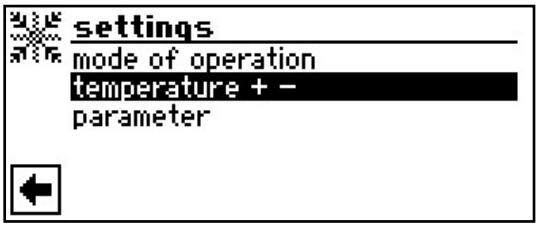



**1 Automatic**
Comfort cooling is regulated based on the set temperatures.

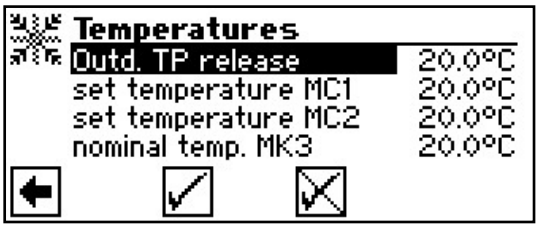
**2 Off**
Comfort cooling is switched off.

## SET TEMPERATURES FOR THE COMFORT COOLING

① In the menu "Comfort cooling Settings", select the menu item "temperature + -"…




② The screen switches to the "Comfort cooling temperatur + -" menu…
If system setting:
**Cooling = Fixed temperature**



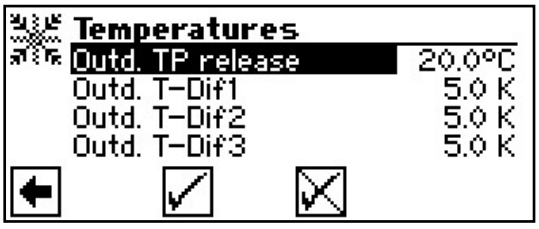

**Outd. TP release** **Outdoor temperature release**
Cooling is activated above the set value.

**Set temperature MC1** **Set temperature of mix. circuit 1**

**Set temperature MC2** **Set temperature of mix. circuit 2**

**nominal temp. MK3** **Set temperature of mix. circuit 3**
Flow temperature for heating or cooling circuit

If system setting:
Cooling = **dependent on outdoor temperature**




**Outd. TP release** **Outdoor temperature release**
Cooling is activated above the set value.

**Outd. T-Dif1** **Outdoor temperature difference of mixing circuit 1**

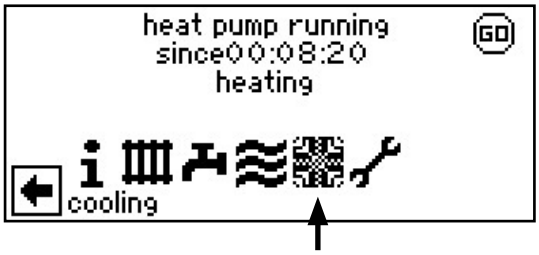
**Outd. T-Dif2** **Outdoor temperature difference of mixing circuit 2**

**Outd. T-Dif3** **Outdoor temperature difference of mixing circuit 3**
Difference between outdoor temperature and flow temperature of the heating or cooling circuit

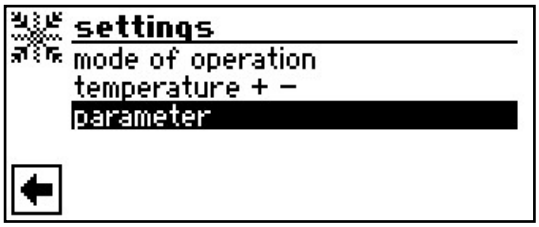
③ Make settings.

## SET PARAMETERS FOR THE COMFORT COOLING

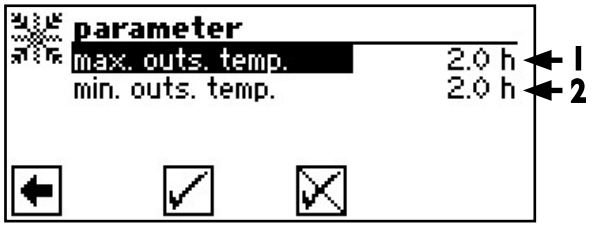
① In the navigation screen, select the symbol … 




② The screen switches to the "Comfort cooling Settings" menu. Here, select the menu item "parameters"…




③ The screen switches to the "Comfort cooling parameters" menu. Select desired parameters…




**1 max. outs. temp.** **Outdoor temperature exceeded**
For the cooling to be activated, the outdoor temperature must exceed the OT-Active temperature for the period set here.

**2 min. outs. temp.** **Outdoor temperature dropped below limit**
For the cooling to be switched off, the outdoor temperature must fall below the OT-Active temperature for the period set here.

**! NOTICE**
Activate the automatic mode only during the summer months or shut off the Comfort cooling during the heating period by means of a room thermostat.
Otherwise, it is possible that, depending on the location of the outdoor sensor, the system will switch to cooling if the outdoor temperature exceeds the set temperature.

**CAUTION**
Automatic mode also means that the system automatically switches to heating during the summer months if the outdoor temperature drops below the set temperature.
If this is not desired, the operating mode for the heating must be set to "Off".

Operating manual of the heating and heat pump regulator, program section "Heating", section "Setting the operating mode for the heating".

**CAUTION**
The single-room regulator must switch from heating to cooling in this case. A floating contact for such switching of the single-room regulator can be tapped from the terminals FP2.
Only possible if mixing circuit 2 is set to "cool" or "HW+cool". The circulating pump for mixing circuit 2 must then be connected to terminal HUP or FP1.

For value ranges see page 32, "Overview of Comfort board 2.0 system settings"

**NOTICE**
If there is only one mixing circuit for cooling, mixing circuit 2 must always be used for the cooling function.

**NOTICE**
The display may vary depending on whether the cooling is set to fixed temperature or outdoor temperature dependence.

**NOTICE**
The settings made under "SetTemp1" and "SetTemp2" are active only if "fixed Tp" (=Fixed temperature) is selected for "cool" in the "System Setting" menu:

**NOTICE**
If set to "fixed Tp", the flow temperature will be used that is set under "Set temperature MC1" and "Set temperature MC2".
If set to "set outd. TP", the flow temperature will be dependent on the outdoor temperature.

**NOTICE**
Setting the temperature above > 18 °C is possible only if the separating tank is not circulated in cooling and "Separating tank" is set in the system settings.

**CAUTION**
Select a fixed temperature that will not drop below the dew point, or use a dew point monitor.

**NOTICE**
If the outdoor temperature exceeds the set activation temperature by more than 5K, the Comfort cooling will be switched on after 2 minutes.
The Comfort cooling is automatically switched off if the outdoor temperature drops below the activation temperature longer than the set number of hours (see "min. outs. temp.") or if the operating mode "Off" is selected.

**NOTICE**
"Outd. T-Dif1" and "Outd. T-Dif2" and "Outd. T-Dif2" are active only if "Set outd. TP" (=outdoor temperature) is selected for "cooling" in the "System Setting" menu.

**CAUTION**
If the Comfort cooling is operated based on the outdoor temperature, dew point monitoring is absolutely necessary.

# Active cooling

**CAUTION**
Before setting software settings, it is necessary to check the hydraulic connection.

**NOTICE**
The active cooling function can only be used if the system is utilised in accordance with the corresponding hydraulic diagram.
There is otherwise no guarantee that the active cooling with function properly.

**CAUTION**
The use of active cooling is not possible with units that have an integrated passive cooling option.

**CAUTION**
It is necessary to connect a dew point detector to the unit when using active cooling.

Furthermore, please note that the active cooling function may only be used if the heating and heat pump regulators are equipped with software > 1.31 and the following program settings for the heating and heat pump regulators have been established:

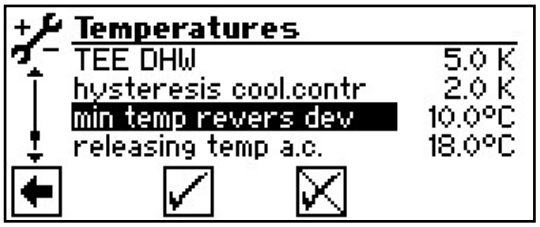
- In the area „System settings“:

  Mixing circuit 2 = cool
  Service water 3 = with CP
  Service water 5 = with HSP
  Active cooling = yes

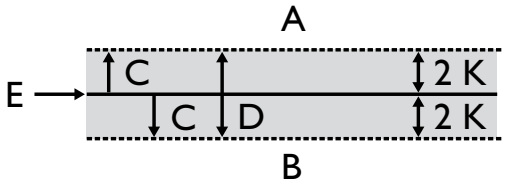
- In the area „Temperatures“:

  Hysteresis cool. contr
  min temp revers dev
  releasing temp ac.

The following additional setting possibilities will be shown in the „ Temperatures“ menu of brine/water systems.




**Hysteresis cool.contr** **Hysteresis cooling regulator**




| | |
|---|---|
| A | There will be a request for active cooling in this temperature range |
| B | There will be no request for active cooling in this temperature range |
| C | Hysteresis |
| D | Neutral zone |
| E | Set temperature of mixing circuit 2 |

**min temp revers dev**
With active cooling, it is possible, that at the same time the request for active cooling is being made, for example, domestic hot water or swimming pool heating may be taking place.
In this case, the cold storage tank can be cooled to the set temperature before active cooling is interrupted and only domestic hot water or swimming pool heating then prepared by the heat pump.

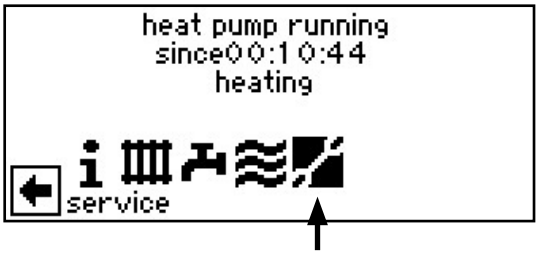
**Releasing temp ac.**
Beginning at the heat source temperature set in this menu, passive cooling switches to active cooling.

For value ranges see page 32, “Overview of Comfort board 2.0 system settings”

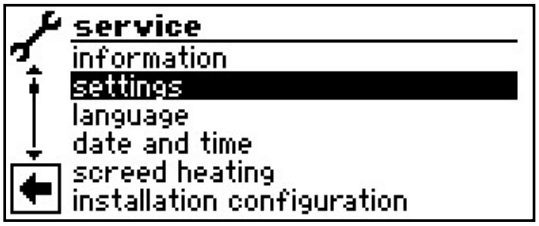
# Program section "Solar control"

**! CAUTION**
Before making software settings, it is necessary to check the hydraulic connection.

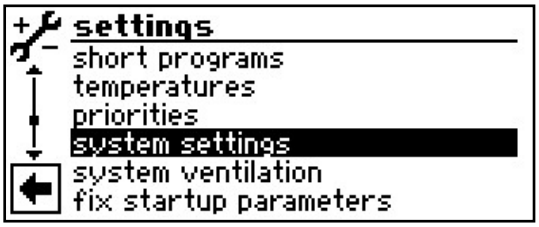
① In the navigation screen, select the symbol ...




② The screen switches to the "Service" menu. Here, select the menu field "Settings"...

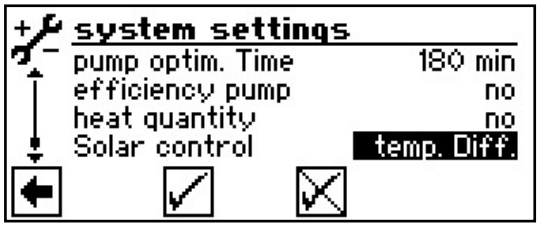



③ Here, select the menu item "System settings"...

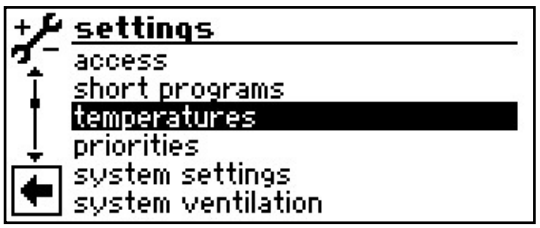



## ACTIVATING A TEMPERATURE DIFFERENCE REGULATOR

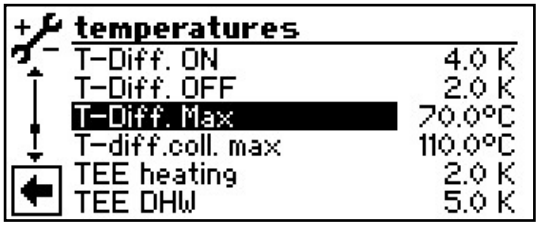
① Select the menu item "Solar control"...




② Return to the "Settings" menu and select "Temperatures"...




③ The screen switches to the "Temperatures" menu...




**T-Diff. On** **Temperature difference On**

Solar charge pump is switched on as soon as the temperature in the solar collector exceeds the tank temperature by the set value

**T-Diff. Off** **Temperature difference Off**

Solar charge pump is switched off as soon as the temperature in the solar collector drops below the tank temperature plus the set value under "T-Diff. Off".

**T-Diff. max.** **Temperature difference tank maximum**

Solar charge pump is switched off as soon as the temperature set under "T-Diff. Max" is reached in the tank.

④ Make desired settings...

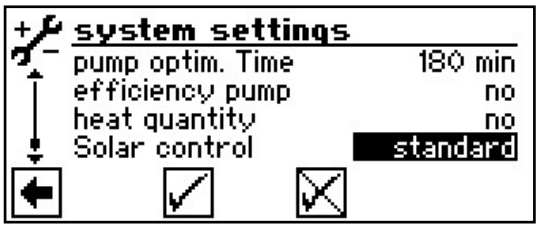
For value ranges see page 32, "Overview of Comfort board 2.0 system settings"

**NOTICE:**
If "T-Diff. Max" is set > 60 °C, increased calcium in the hot water tank can be expected.

⑤ Scroll to bottom of menu. Save settings or cancel. Return to menu "Settings".

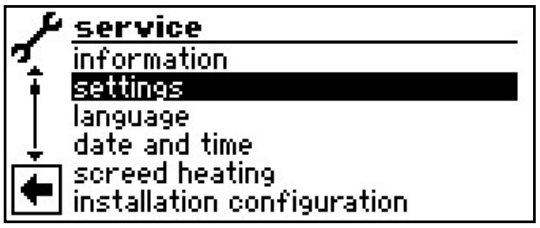
## SETTING THE MAXIMUM COLLECTOR TEMPERATURE

① In the menu "Settings", select the menu item "Solar control". select "standard" and confirm your input…

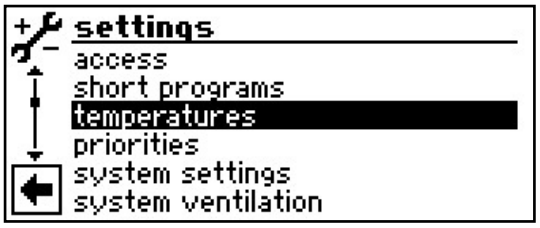



**NOTICE**
This setting extends the temperature differential control in the „Service setting" area to include the function "T-diff.coll. max" (= Maximum collector temperature difference" (see ④)

② Return to the "Service" menu and select menu item "Settings"…




③ In the menu "Service settings", select the menu item "Temperatures"…







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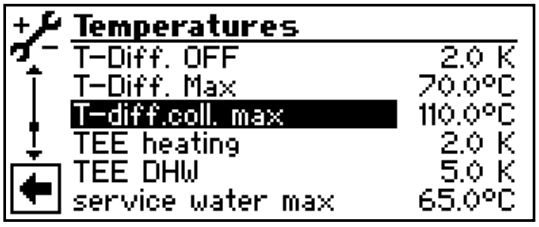
④ The screen switches to the “Temperatures” menu. Scroll to menu item “T-diff.coll max.” and select it…




**T-diff.coll. max** **Temperature difference collector maximum**

If this collector temperature is exceeded, the collector protection function starts. Here targeted cycles are used to try to lower the temperature at the collector, provided the storage tank temperatures allow this. In this case the heating and heat pump controller may overheat the storage tank by 5 K to the set “T-Diff. Max”

**T-Diff. Max** **Maximum storage tank temperature difference**

If this storage tank temperature is reached, the circulation pump stops. In the case of the collector protection function, this temperature is increased by 5 K. If the actual temperature in the storage tank exceeds 95 °C, the circulation pump is generally deactivated and – if possible – it is discharged via the collector (for example, while shaded during the evening hours or at night).

⑤ Make desired settings…

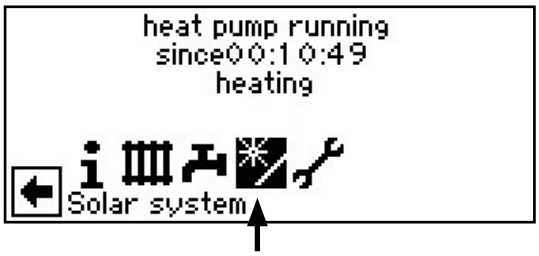
For value ranges see page 32, “Overview of Comfort board 2.0 system settings”

⑥ Scroll to bottom of menu. Save settings or cancel. Return to menu “Settings”.

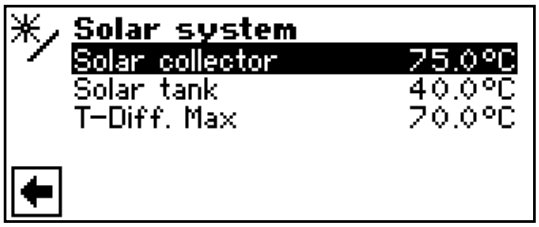
## SOLAR HEATING INFORMATION

If the “Solar control” is set to “Standard” or “Solar HP”, the symbol for the solar heat will be displayed on the navigation screen: .

① Select the symbol…




② The screen changes to the “Solar system” menu




**Solar coll.** **Solar collector**
Solar collector actual temperature

**Solar tank**
Solar tank actual temperature

**T-Diff. max**
Temperature difference tank maximum

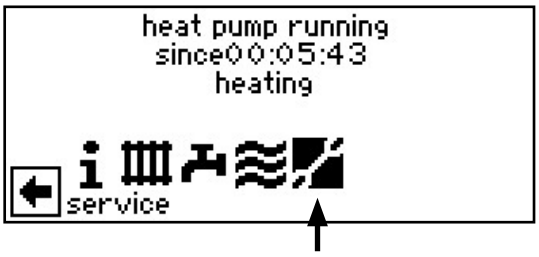
**NOTICE.**
In this window, no settings are possible.

# Supplying external power sources

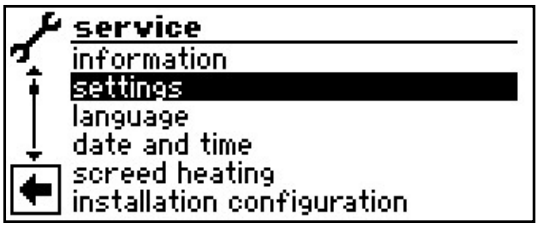
You can supply energy from an external tank to the heating circuit and to the hot water charging circuit if the temperature is sufficient.

**! CAUTION**
Before making software settings, it is necessary to check the hydraulic connection.

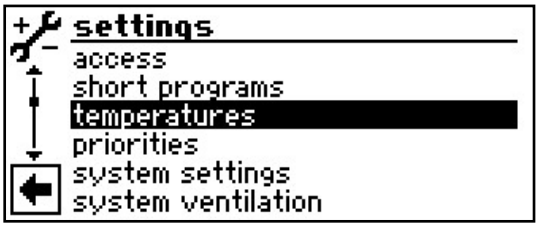
① In the navigation screen, select the symbol … 



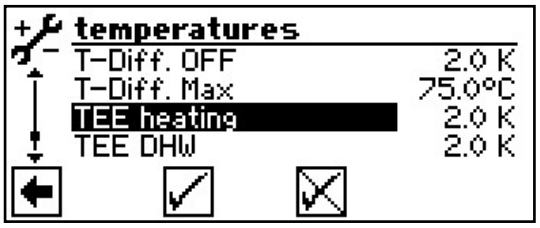

② The screen switches to the "Service" menu. Here, select the menu field "settings"…




③ The screen switches to the "settings" menu. Select the menu field "temperatures"…




④ The screen switches to the "temperatures" menu…




**TEE Heating** **Temperature of external energy source Heating**

If the temperature in the external energy source (tank) is higher by the set value than the current heating set temperature, the heat pump is switched off. The energy from the tank is mixed with mixing circuit 2 (Setting: "Charge") and 2hg 3 (Setting: "Boiler") into the heating system based on the set value.

**TEE DHW** **Temperature of external energy source Hot water**

If the temperature in the external energy source (tank) is higher by the set value than the current hot water set temperature, the heat pump is switched off. The energy from the tank is mixed with mixing circuit 2 (Setting: "Charge") and 2hg 3 (Setting: "Boiler") into the hot water system based on the set value.

⑤ Make desired settings…

For value ranges see page 32, "Overview of Comfort board 2.0 system settings"

**i NOTICE**
The value set under "TEE DHW" should not be below 5 K, in order to prevent delays in heating of the hot water.

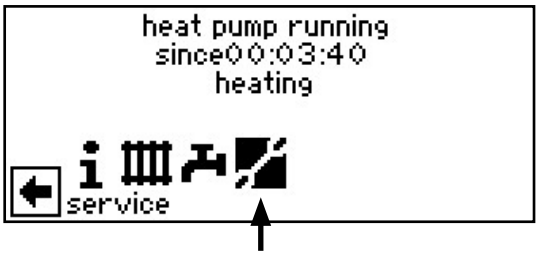
⑥ Save settings or cancel. Return to menu "Settings".

# Heat quantity and volume flow measurements

## SETTING UP THE MEASUREMENT EQUIPMENT

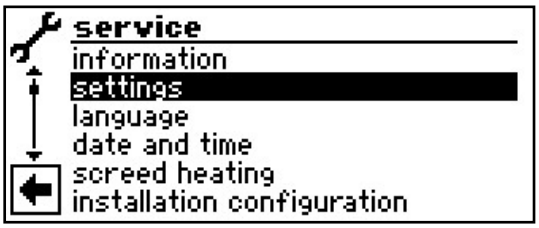
### SELECT PROGRAM AREA

① In the navigation screen, select the symbol…

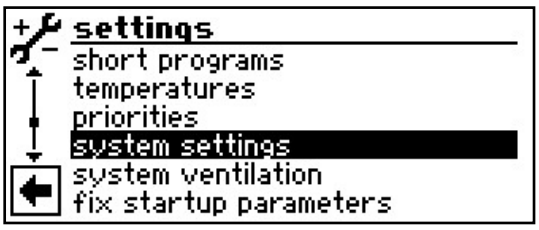



② The screen changes to the menu "Service"…

③ In the "Service" menu select the menu field "Settings"…

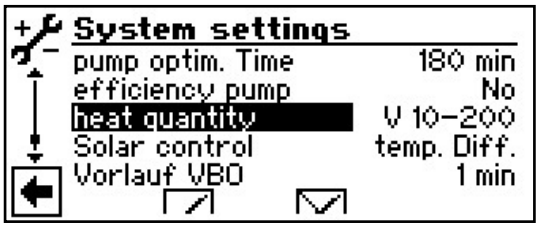



④ In the menu "Settings", activate and select the menu field "System settings"…




⑤ The screen switches to the "System settings" menu…

⑥ Select the 'Heat quantity' parameter. The relevant input field assumes a dark background…




**Setting values:**

| | |
|---|---|
| Factory setting | = No |
| 1" | = V 5-100 |
| $^5/_4$" | = V 10-200 |
| 2" | = V 20-400 |

You can find the necessary setting on the sensor head.

⑦ Set desired settings…

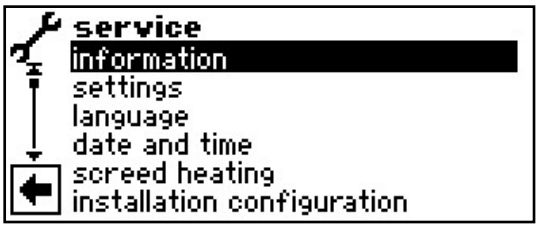
⑧ Save settings or cancel.

**NOTICE**
Improper settings will lead to the flow not being correctly recorded; in such a case, the results of the heat quantity recording are unusable.

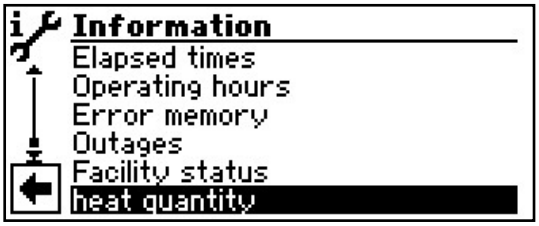
**NOTICE**
The values will only be saved by the regulator every 2 hours so that every time the regulator is started it can account for a difference between the actual generated heat quantity and the displayed heat quantity.

### READOUT OF HEAT QUANTITIES AND VOLUME FLOWS

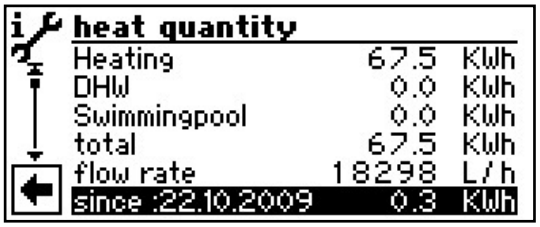
① In the menu “Service”, select the menu field “Information”…




② The screen switches to the “Information” menu…




③ The screen changes to the menu “Heat quantity”…



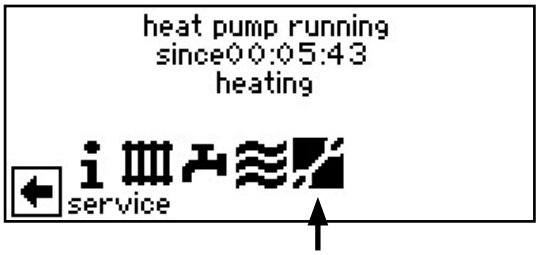

**Heat quantity**

The measured heat quantities for *heating, warm water* (possibly swimming pool) in kWh, the sum of all, and the *flow* in l/h will be displayed.
The last line “*since:* ...” functions the same way as RESET. If it is clicked, the numbers in this line reset themselves to zero - allowing the heat quantity to be recorded for an individually-defined span of time (beginning on the displayed date).

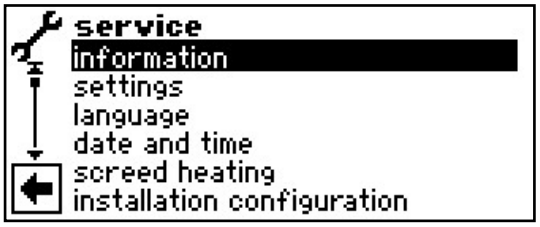
# System informations

### QUERY INFORMATION

① In the navigation screen, select the symbol … 




② The screen switches to the “Service” menu. Here, select the menu field “information”…




③ The screen switches to the “Service information” menu.

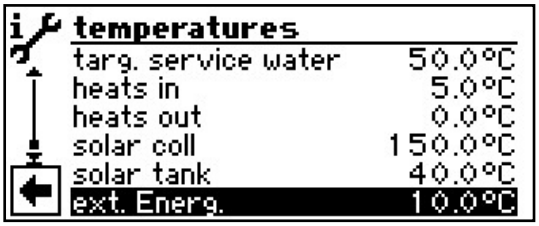


We reserve the right to modify technical specifications without prior notice.
83052500cUK – Translation of the original instruction manual

## QUERY TEMPERATURES

① In the "Service information" menu select the menu field "temperatures"…


② The screen switches to the "Service Information Temperatures" menu. Scroll to bottom of menu…




**MC 2 fore.** **Mixing circuit 2 Flow temperature**

**MC 2 desir.** **Mixing circuit 2 Desired flow temperature**

**MC 3 fore.** **Mixing circuit 3 Flow temperature**

**MC 3 desir.** **Mixing circuit 3 Desired flow temperature**

**solar coll** **Temperature of solar collector**

**solar tank** **Temperature of solar tank**

**ext. Energ.** **Temperature of external energy source**

*Only if „System setting" is:*
*Room stat. = RFV or RFV-K*

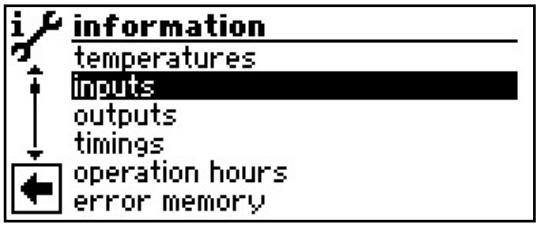
**Room stat.**
**Room stat.MC2**
**Room stat.MC3**

The menu items not explained here are described in the operating manual for the heating and heat pump regulator.

③ Return to menu "Service Information".

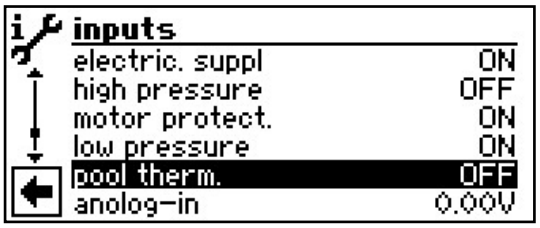
## QUERY INPUTS

① In the "Service Information" menu select the menu field "inputs"…



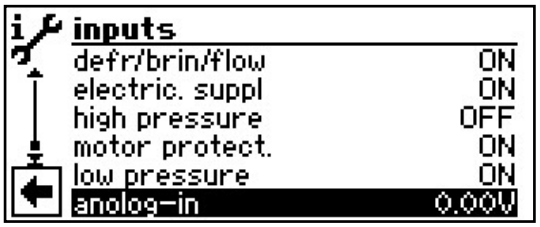

② The screen switches to the "Service information inputs" menu. Scroll to bottom of menu…

**NOTICE**
This menu shows whether the digital inputs of the controller are switched on or off.




**pool therm. Swimming pool thermostat**
*ON* = Swimming pool heating is being requested
*OFF* = Swimming pool heating is switched off

**PV Photovoltaic switching signal**
*ON* = Photovoltaic function is active
*OFF* = Photovoltaic function is not active




**analog-in** **Analogue input 1**
0.00V = voltage input (0 - 10 V)

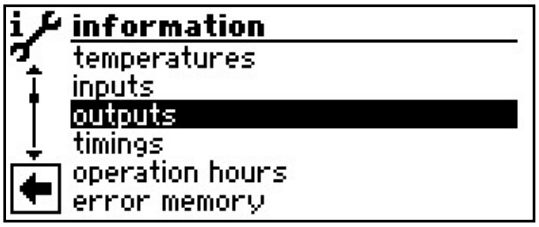
**AIn2** **Analogue input 2**
0.00V = voltage input (0 - 10 V)

The menu items not explained here are described in the operating manual for the heating and heat pump regulator.

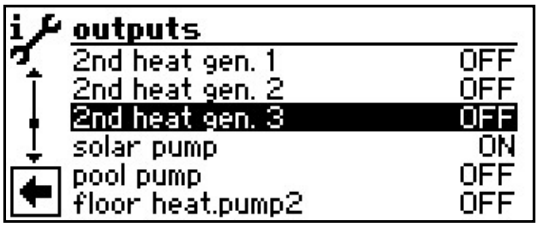
③ Return to menu "Service Information".

## QUERY OUTPUTS

① In the “Service Information” menu select the menu field “outputs”…




② The screen switches to the “Service information outputs” menu. Scroll to bottom of menu…




**2nd heat gen. 3** — **Second heat generator 3**

**floor heat. pump 2** — **Mixing circuit pump 2 / cooling signal 2**

**solar pump** — **Solar charge pump**

**pool pump** — **Swimming pool circulating pump**

**Mixer 2 open** — **Mixer 2 opens**
On = opens / Off = no control

**Mixer 2 close** — **Mixer 2 closes**
On = closes / Off = no control

**floor heat.pump3** — **Mixing circuit pump 3 / cooling signal 3**

**Mixer 3 open** — **Mixer 3 opens**
On = opens / Off = no control

**Mixer 3 close** — **Mixer 3 closes**
On = closes / Off = no control

**AO1** — **Analogue output 1**
0.00V = voltage output (0 - 10 V)

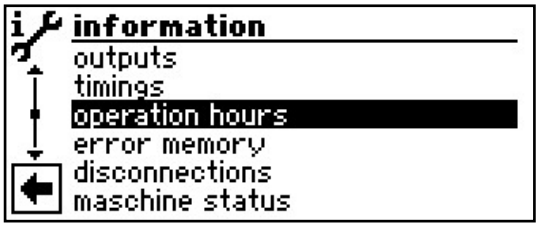
**AO2** — **Analogue output 2**
0.00V = voltage output 2 (0 - 10 V)

The menu items not explained here are described in the operating manual for the heating and heat pump regulator.

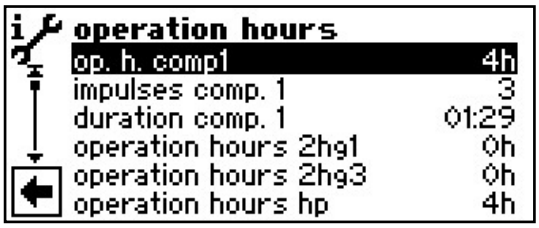
③ Return to menu “Service Information”.

## QUERY OPERATING HOURS

① In the “Service Information” menu select the menu field “operation hours”…




② The screen switches to the “Service Information operation hours” menu. Scroll to bottom of menu…




**operation hours 2hg3** — **Operating hours Second heat generator 3**

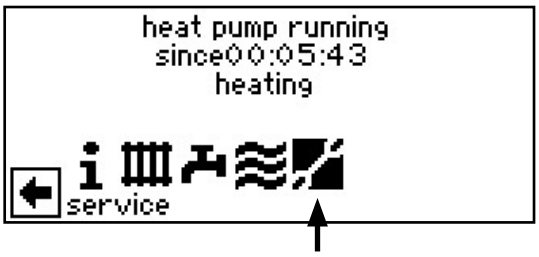
**operation hours pool** — **Operating hours Swimming pool heating or Photovoltaics**

The menu items not explained here are described in the operating manual for the heating and heat pump regulator.

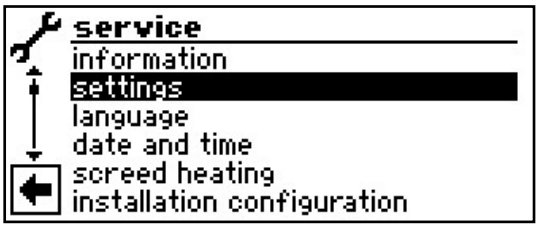
③ Return to menu “Service Information” and then to “Service” menu.

# Make system settings

① In the navigation screen, select the symbol … 




② The screen switches to the “Service” menu. Here, select the menu field “settings”…

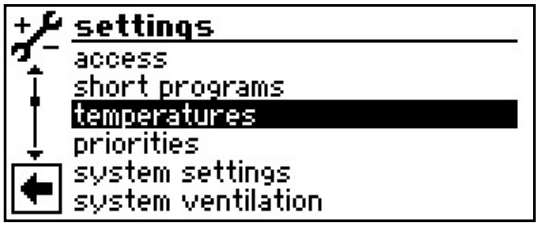



## SHUT OFF SECOND COMPRESSOR IN THE SWIMMING POOL HEATING

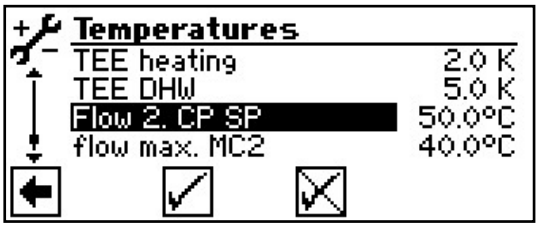
*Only for heat pumps with 2 compressors!*

You can set the flow temperature at which the 2nd compressor in the swimming pool heating is switched off.

① In the “Service Settings” menu select the menu field “temperatures”…




② The screen switches to the “temperatures” menu. Scroll to bottom of menu…




**Flow 2. CP SP** **Flow 2nd compressor swimming pool heating**

Temperature in the flow of the heat pump at which the 2nd compressor in the swimming pool heating is switched off.

**flow max. MC2** **maximum forward flow temperature mixing circuit 2**

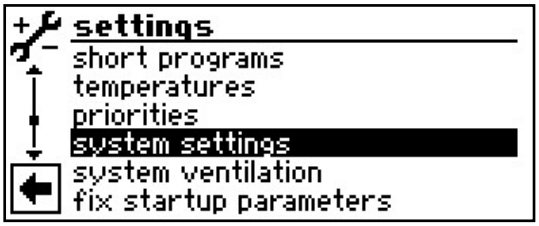
Is only displayed if mixing circuit 2 is set to charger mixer. The forward flow sensor at TB2 will then be used to limit the flow temperature following the mixer. That means: if the TB1 exceeds the value set, the charger mixer will be moved in a >Closed< direction.

③ Make desired settings…

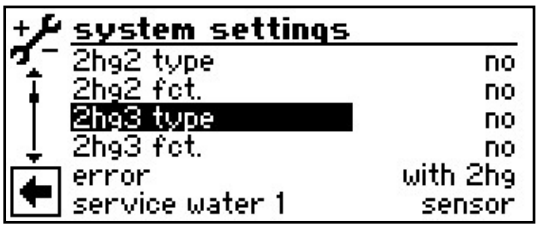
④ Scroll to bottom of menu. Save settings or cancel. Return to menu “Settings”.

## DEFINE SYSTEM SETTINGS OF THE COMFORT BOARD 2.0

① In the "Service Settings" menu select the menu field "system settings"…




② The screen switches to the "System" menu.…




**2hg3 type** **Type of additional heat generator 3**

*No* = no 2hg3 connected, the outlet has the function "collective fault"
*Boiler* = boiler connected as additional heat generator 3, system starts bivalent

**NOTICE**
If "2hg 3 Type = Boiler", mixing circuit 2 must be connected and set as a charging mixer.

**2hg3 fct** **Function of additional heat generator 3**

*HW + SW* = heating and hot water (only for boiler)
*SW* = hot water (only for heating element)

**Heating**

*w. pool p.* = with swimming pool circulating pump
*wo. pool p.* = without swimming pool circulating pump
If the hydraulic components of the heating system are designed so that heating and swimming pool can be heated simultaneously, "w. pool p." can be set. Heating and swimming pool then operate simultaneously.

**NOTICE**
"Heating = w. pool p." is effective only with separated tank integration.

**Mixing circuit 2**

Setting the functioning of the mixer control
*Charge* = Mixer serves as charger mixer, possibly for a boiler
*Discharge* = Mixer serves as a control mixer, possibly for floor heating
*Cool* = Mixer serves as a control mixer for passive cooling function (only for B/W devices)
HW+*Cool* = Mixer serves as a control mixer for heating and passive cooling function (only for B/W devices)
*No* = Mixer without function

**Cooling**

*Fixed Tp.* = Cooling based on set temperature
*set. AT* = Cooling based on outdoor temperature and set difference

**sw.pool prep.** **Swimming pool heating**

*with CP* = additional circulating pump in operation during swimming pool heating
*wo. CP* = additional circulating pump is switched off during swimming pool heating

**sw.pool min.** **Minimum operating duration of swimming pool heating**

This section is used to set a minimum operating duration for heating the swimming pool.
This may be necessary if a return flow is integrated to prevent the system from continuously switching between swimming pool and another supply type with a higher priority.
Setpoints: 0 h – 5 h

**Mixing circuit 3**

*Discharge* = Mixer serves as a control mixer, possibly for floor heating
*No* = Mixer without function

**Efficiency pumps**

*Yes* = activiation of an efficient heating circulation pump over 0 - 10V (Analogue Out 2)
*No* = no energy efficient pumps attached

**Heat quantity**

Must be set in connection with the "Heat quantity recording" according to the specifications found in the corresponding operating manual.

**Solar control**

*Tempdiff* = temperature difference regulator
*Standard* = solar regulator with tank/collector protection
*Solar HP* = is only necessary is a corresponding heat pump type can be integrated

**active cooling**

*Yes* = active cooling on
*No* = active cooling out

The menu items not explained here are described in the operating manual for the heating and heat pump regulator.

③ Save settings or cancel. Return to menu “Settings”.

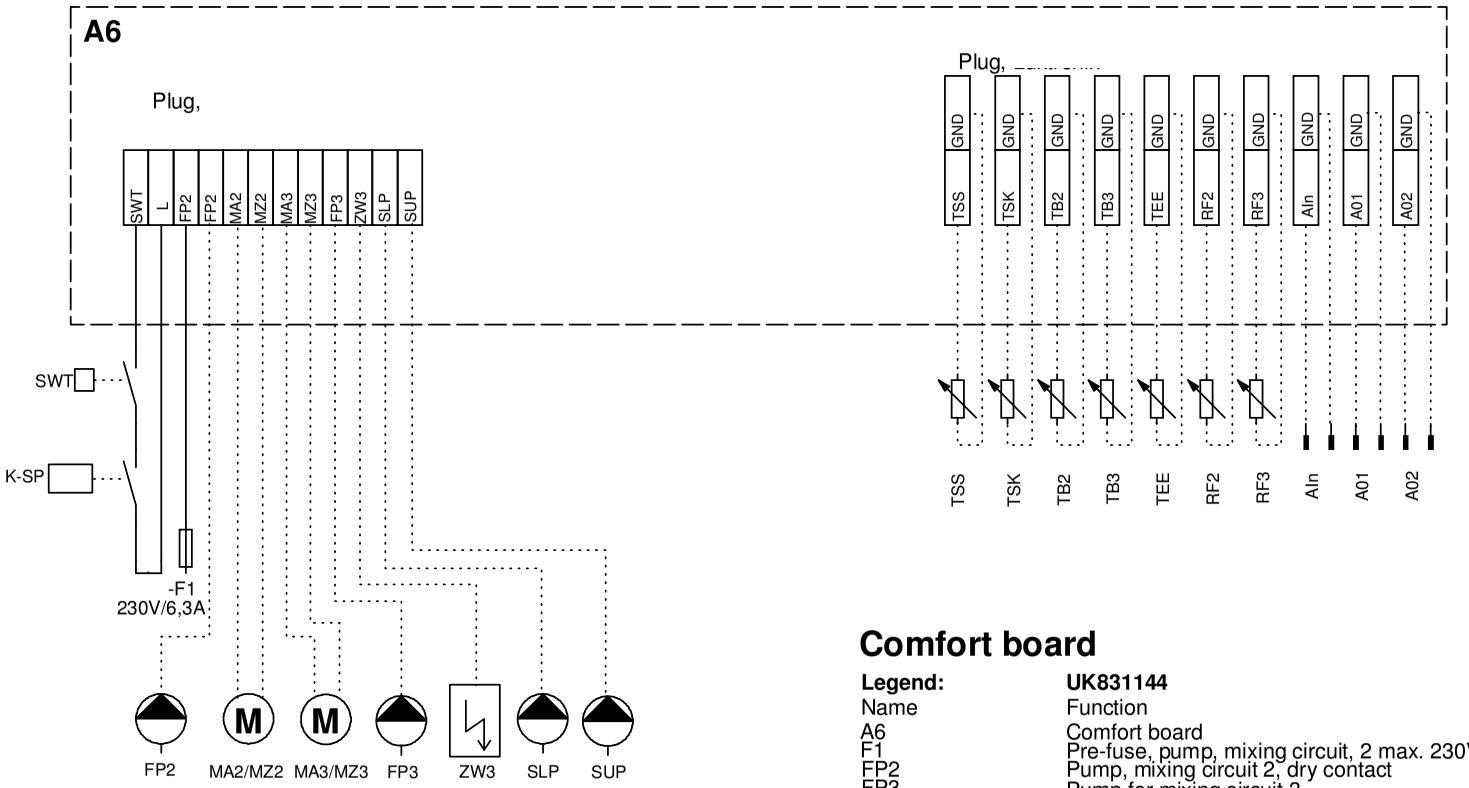
# Overview of Comfort board 2.0 system settings

| Parameter | Factory setting | Commissioning | Value range | Access |
|---|---|---|---|---|
| Set temperature MC1 | 20 °C | °C *) | 18 °C – 25 °C<br>for separating tank setting:<br>5 °C – 25 °C | User |
| Set temperature MC2 | 20 °C | °C *) | 18 °C – 25 °C<br>for separating tank setting:<br>5 °C – 25 °C | User |
| nominal temp. MK3 | 20 °C | °C *) | 18 °C – 25 °C<br>for separating tank setting:<br>5 °C – 25 °C | User |
| Outd. TP release | 20 °C | °C *) | 15 °C – 35 °C | User |
| Outd. T-Diff1 | 5 K | K *) | 1,0 K – 10,0 K | User |
| Outd. T-Diff2 | 5 K | K *) | 1,0 K – 10,0 K | User |
| Outd. T-Diff3 | 5 K | K *) | 1,0 K – 10,0 K | User |
| T-Diff. On | 4,0 K | K *) | 2 K – 15 K | User |
| T-Diff. Off | 2,0 K | K *) | 0,5 K – 10 K | User |
| T-Diff. Max | 70 °C | °C *) | 50 °C – 90 °C | User |
| T-diff. coll. max. | 110 °C | °C *) | 90 °C – 120 °C | User |
| TEE Heating | 2,0 K | K *) | 1 K – 15 K | User |
| TEE DHW | 5,0 K. | K *) | 1 K – 15 K<br>for DHW: 5,5 K – 15 K | User |
| Flow 2. CP SP | 50 °C | °C *) | 10 °C – 70 °C | Fitter |
| flow max. MC2 | 40 °C | °C *) | 25 °C – 75 °C | User |
| Hysteresis cool.contr | 2,0 K | K *) | 0,5 K – 5,0 K | Fitter |
| min temp revers dev | 10 °C | °C *) | 5 °C – 25 °C | Fitter |
| Releasing temp a.c. | 18 °C | °C *) | 5 °C – 25 °C | Fitter |
| min. flow cooling | 18 °C | °C *) | 5 °C – 25 °C | Fitter |
| 2hg 3 Type | No | No • Boiler *) | No • Boiler | Fitter |
| 2hg 3 Fct | No | No • Heat + HW • Hot water *) | No • Heat + HW • Hot water | Fitter |
| Heating | wo pool p. | wo pool p. • w. pool p. *) | wo pool p. • w. pool p. | Fitter |
| Mixing Circuit 2 | No | No • Discharge • Charge • Cool • HW+Cool *) | No • Discharge • Charge • Cool • HW+Cool | User |
| Mixing Circuit 3 | No | No • Discharge • HW+Cool *) | No • Discharge • HW+Cool | User |
| Setting MC2 | set. AT | set. AT • Fixed Tp *) | set. AT • Fixed Tp | User |
| Setting MC3 | set. AT | set. AT • Fixed Tp *) | set. AT • Fixed Tp | User |
| Cooling | Fixed Tp | set. AT • Fixed Tp *) | set. AT • Fixed Tp | User |
| sw.pool prep. | wo. CP | wo. CP • with CP *) | wo. CP • with CP | Fitter |
| sw.pool min. | 0,5 h | h *) | 0 h – 5 h | User |
| efficiency pump | No | No • Yes *) | No • Yes | User |

| Parameter | Factory setting | Commissioning | Value range | Access |
|---|---|---|---|---|
| heat quantity | No | No • V 5-100 • V 10-200 • V 20-400 • V 2-40 *) | No • V 5-100 • V 10-200 • V 20-400 • V 2-40 | User |
| Solar control | Tempdiff. | temp. Diff. • standard • solar-HP *) | temp. Diff. • standard • solar-HP | User |
| Active cooling | No | Yes – No *) | Yes – No | Fitter |

*) Please enter value or cross out if not applicable

# Terminal diagram




## Comfort board

| **Legend:** | **UK831144** |
|---|---|
| Name | Function |
| A6 | Comfort board |
| F1 | Pre-fuse, pump, mixing circuit, 2 max. 230V 6.3AA, dry contact |
| FP2 | Pump, mixing circuit 2, dry contact |
| FP3 | Pump for mixing circuit 3 |
| K-SP | Contactor, secondary pump |
| L | 230V |
| MA2/MZ2 | Charge/discharge/cooling mixer |
| MA3/MZ3 | Charge/discharge/cooling mixer |
| SLP | Solar charge pump |
| SUP | Swimming pool, circulating pump |
| SWT | Swimming pool, thermostat |
| ZW3 | Control signal, additional heat generator 3 |
| AIn | Analogue input 0-10V / 0-20 mA |
| A01 | Analogue output 1 0-10V |
| A02 | Analogue output 2 0-10V |
| RF2 | Room station, mixing circuit 2 |
| RF3 | Room station, mixing circuit 3 |
| TB2 | Sensor mixing circuit 2 |
| TB3 | Sensor mixing circuit 3 |
| TEE | Sensor, external energy source |
| TSK | Error solar collector |
| TSS | Error solar tank |

**! CAUTION**

For all unit-specific connections, refer to the terminal diagram for the respective unit.

Operating manual for the respective unit

# Abbreviations

| Abbreviation | Meaning |
|---|---|
| Comp. | compressor |
| CP | Circulation, circulating pump |
| DHW | Domestic hot water |
| DHW pump | Domestic hot water circulating pump/switching valve |
| Ext. energ. | External energy source |
| Fct | Function |
| Fixed Tp | Fixed temperature |
| FL (=flow) | Flow |
| FP1 (= MCP 1) | Mixing circuit, circulating pump 1 |
| FUP 2, floor heat. pump 2 | Mixing circuit, circulating pump 2 / cooling signal (floating) |
| FUP 3, floor heat. pump 3 | Mixing circuit, circulating pump 3 |
| Heat | Heating |
| Heat. sys. pump | Heating, circulating pump |
| HP | Heat pump |
| MC1,2,3 | Mixing circuits 1,2,3 |
| Mix | Mixer |
| Outd. T-Dif | Outdoor temperature difference |
| Outd. TP | Outdoor temperature |
| Outd. TP release | Outdoor temperature active |
| pool pump | Swimming pool, circulating pump |
| pool therm. | Swimming pool heating, thermostat |
| set- AT | Dependent on outdoor temperature |
| Set temp. | Set temperature |
| Solar pump | Solar circuit, circulating pump |
| suppl. pump | Additional circulating pump |
| sw.pool min. | minimum operating duration of swimming pool heating |
| sw.pool prep. | Swimming pool heating |
| SWP | Swimming pool |
| T-Diff. | Temperature difference |
| TEE | Temperature of external energy source |
| VBO | Ventilator, well or brine circulating pump |
| ZWE, 2hg | Additional heat generator |

83052500cUK – Translation of the original instruction manual

Manufactured by ait-deutschland GmbH