

Wave.com4

SAUNA CONTROL UNIT

INSTRUCTIONS FOR ASSEMBLY AND USE
English



The first unique patented high-end modular design sauna control unit which can be operated both externally and internally.

sentiotec
WORLD OF WELLNESS

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1.0.0 DESCRIPTION OF THE DEVICE

1.1.0 GENERAL SAFETY INFORMATION AND REGULATIONS

We congratulate you on the purchase of a high-quality sentiotec sauna control unit. The present product is TÜV-tested. The following standard regulations must absolutely be complied with when using this device:

- DIN EN60335-2-53
- DIN EN60335-1
- IEC 60335-2-53



WARNING:

The possibility of serious or even fatal injury exists in the event of non-observance.



CAUTION:

The possibility of slight to moderate injury or material damage exists in the event of non-observance.



TIP:

Gives tips for use and useful information.

Store these instructions for assembly and use carefully near to the operating unit in order to be able to refer to safety tips and operating information at any time.

- Improper assembly can constitute a fire risk!
- The electrical connection may only be executed by qualified experts.
- The connection diagram must be complied with during connection.
- Before the operating unit is commissioned, it must be verified that all connections are firmly connected.
- This device is not intended for use by persons (including children) with limited psychological, sensory or mental capacities or a lack of experience and/or knowledge, unless they are supervised by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the device.
- The device is not appropriate for the direct control of sauna heating devices. Fire hazard.
- Keep these instructions for assembly and use carefully in proximity to the control unit in order to be able to refer to safety tips and important information at any time.

Instructions for assembly and use

- Also heed the special safety tips in the individual chapters.
- If specific problems occur which are not sufficiently dealt with in these instructions for use, please contact your supplier for the sake of your own safety.
- Unauthorised modifications or alterations to this sauna control unit are not permitted for safety reasons.
- Read the installation instructions carefully before assembling the device. This will enable you to make use of all benefits which the device has to offer and prevent damage.
- The operating instructions for the combinable devices of the wave.com4 series must be heeded and constitute part of these instructions for use.
- The wave.com4 sauna control unit may only be connected under strict compliance with these instructions! You must use the original cable supplied and original components. The standards (wire cross-section, insulation, temperature class, etc.) are only safely complied with when these cables are used.
- Subject to technical changes.

1.2.0 USE AS INTENDED

The purpose of the control unit is **solely** for controlling sauna heaters.
This device is a sauna control device which possesses the following functions:

- control of sauna heaters up to 9KW
- operation/ dimming of a cabin light
- (optional: control of a evaporator)
- (optional: control of a ventilator)

For basic operation (= Finnish operation) a sauna cabin with a sauna heater is required in addition to the basic package (wave.com4 power unit with operating unit, sensor and cable).



Figure 18: operating unit





Figure 19: Wave.com4 power unit



The instructions in the installation guide must absolutely be complied with when wiring the components.

1.3.0 MODE OF OPERATION

The control unit is ready for operation as soon as all assembly work is complete. When it is connected to the mains, the self test starts, during which all LEDs illuminate. The control unit then switches into stand-by mode and the  LED lights up. The control unit is activated by pressing the  button.

The control unit starts, the internal illumination is activated.

The Wave.com4 sauna control unit regulates the temperature inside the cabin. When the set temperature is reached, the heating rods in the sauna heater are switched off. Then heating rods are continuously switched on to maintain the set temperature.

Instructions for assembly and use

The operation time of the sauna control unit can be set. An acoustic signal sounds when the set operation time expires.

The Wave.com4 sauna control unit starts every operation with the last used parameters:

- set temperature
- operation time
- brightness (cabin light) The last desired temperature settings,

The following table indicates which devices you require for which operating mode.

Device \ Function	Finnish mode	Humidity/combi mode
WC4-B-L + WC4-B-x**	Yes	No
WC4-B-L + WC4-B-x** + WC4-H-PCB + WC4-H-F2	Yes*	Yes- timed humidity mode
WC4-B-L + WC4-B-x** + WC4-H-PCB + WC4-H-H	Yes	Yes
WC4-B-L + WC4-B-x** + WC4-H-PCB + WC4-H-F2+ WC4-H-H	Yes*	Yes*
WC4-B-TCH+ WC4-B-L (> V17.3)+ WC4-H-PCB + WC4-H-F2+ D-sensor	Yes	Yes- timed humidity mode
WC4-B-TCH+ WC4-B-L (> V17.3) + WC4-H-PCB + WC4-H-H	Yes	Yes
WC4-B-TCH+ WC4-B-L (> V.17.3) + WC4-H-PCB + WC4-H-F2+ WC4-H-H	Yes	Yes

*If precise temperature measurement and the display of the cabin temperature are required, the necessary components are optionally available.

Operating unit:

The input and display module with a membrane keyboard operating display has a seven segment display. The operating unit is connected to the base module using RJ10 4/4.

Cleaning of the front film:



Select a cleaning interval adapted to the degree of soiling

4. Disconnect the wave.com4 sauna control system completely from the mains and switch off all poles
5. Do not remove any component of the Wave.com4 sauna control system
6. Gently wipe the front film with a dry cloth or a soft cloth slightly moistened with soapy water (see Figure 4).



Do not clean the back and the circuit board behind it yourself under any circumstances!



In the case of doubt, contact qualified specialists (authorised electronics specialist).

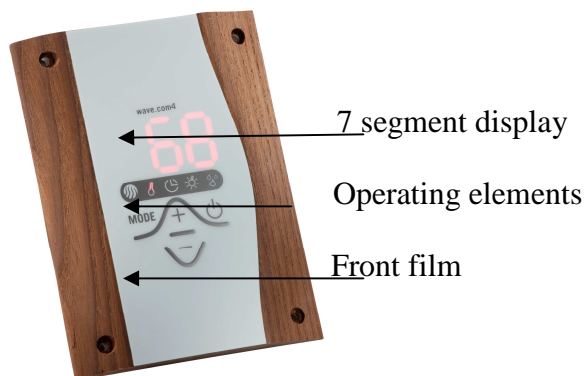


Figure 21: description of operating unit

1.6.0 SCOPE OF SUPPLY

The following are supplied with the Wave.com4 base module:

- Wave.com4 power unit
- Wave.com4 operating unit incl. data cable RJ10 4/4
- Wave.com4 heater temperature sensor with 139 °C thermal fuse, incl. sensor cables

1.7.0 SOFTWARE

All Wave.com4 components connected to the bus must conform to the December 2011 production status.



The software can only be updated at the factory.

2.0.0 ASSEMBLY OF THE COMPONENTS



Assembly information

The Wave.com4 sauna control unit must only be assembled with a conventional screwdriver and not with a cordless screwdriver.

We cannot accept liability for damage caused by assembly otherwise than as intended.



Figure 22: assembly information Wave.com4 sauna control unit

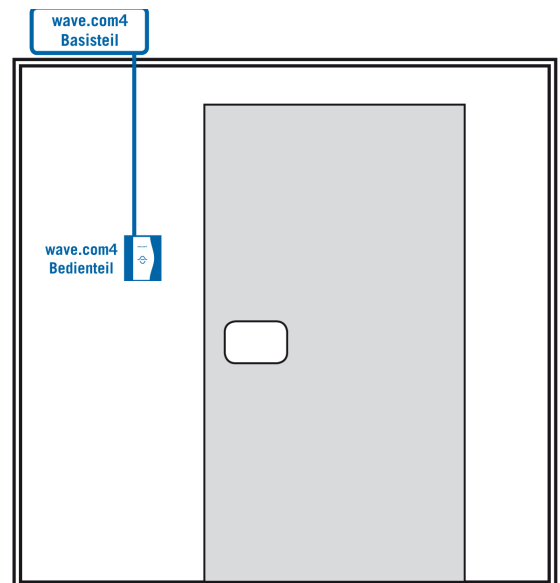
2.1.0 ASSEMBLY OF THE WC4-B-L POWER UNIT



Preferably mount the Wave.com4 power unit on the cabin roof, where all wires logically converge.

- Open the casing by loosening the screw connection of the lid.
- Remove the lid of the Wave.com4 power unit.
- You can affix the Wave.com4 power unit to the subfloor at the 4 corners of the chassis.

exterior view



2.2.0 INSTALLATION OF SENSOR CABLES

Figure 23: connection of Wave.com4 power unit



Never install sensor and mains cables together.



Observe the standard regulations in this regard.



Conscientiously install the sensor cables in the interest of your safety.



Conscientiously install the sensor cables in the interest of a good sauna climate.

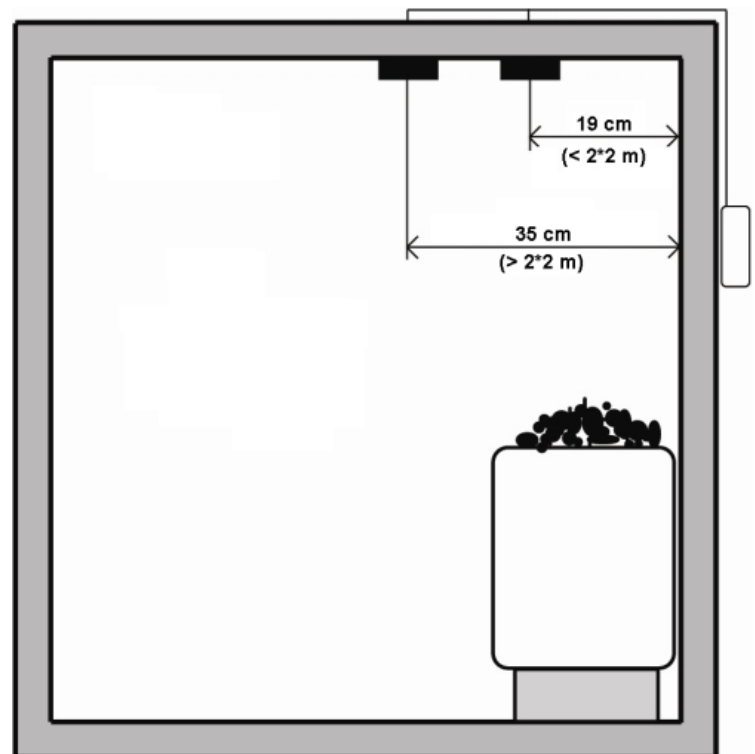


Figure 24: installation of sensor cables

2.3.0 SENSOR MOUNTING

2.3.1 Mounting of the heater sensor

The **heater sensor** (4-wire) consists of a temperature sensor and a thermal fuse (safety fuse). The wooden sensor casing (optionally available in aspen) is mounted on the **cabin ceiling above the sauna heater**. The distances to be complied with can be found in Figures 9 and 10, whereby it must be heeded that the **distance to the cabin wall** must be **19 cm** for sauna cabins of **up to 2 x 2 m**, for **larger cabins** it must be **35 cm**, unless another position is explicitly specified in the cabin description.

Drill through the cabin ceiling with the aid of an 8 mm drill in accordance with Figure 9. Install the sensor cables through the shaft which has just been drilled.

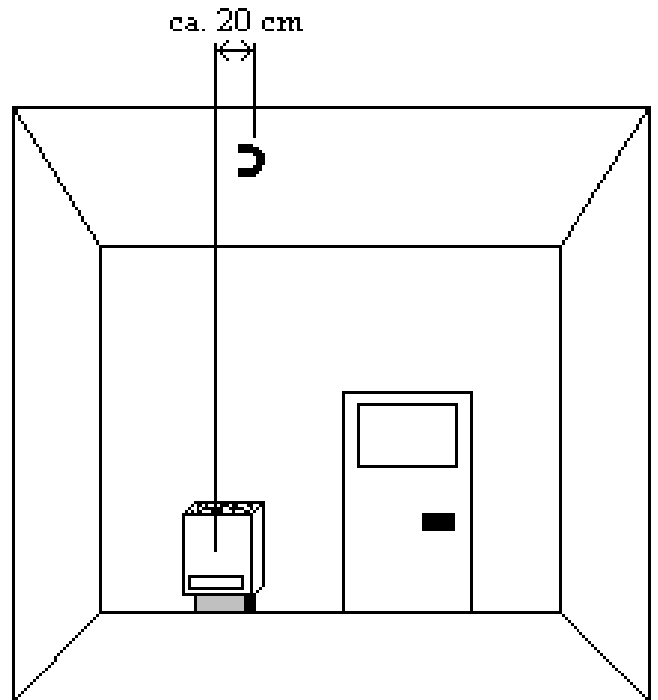


Figure 25: mounting heater-sensor



Ensure that no cable is damaged when feeding in the sensor cables (silicone cables can be damaged very easily).



You can recognise the respective circuit (temperature sensor circuit or temperature limiter circuit) from the marking on the sensor cables.

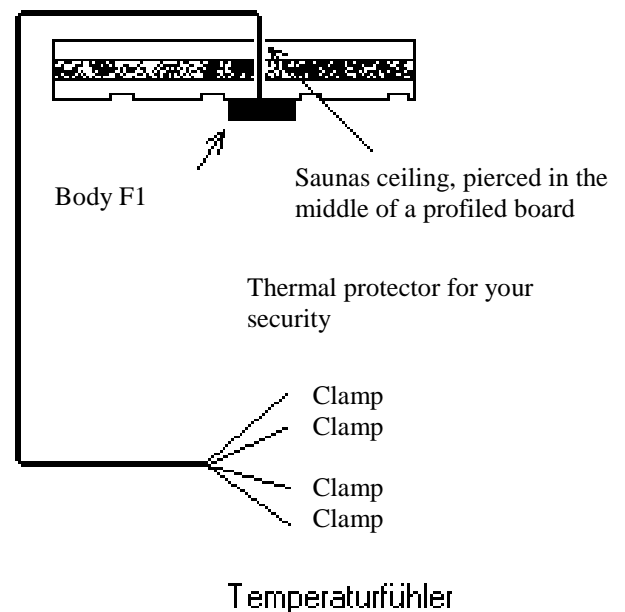


Figure 26: setting of the heater sensor

2.3.2 Mounting of the humidity sensor (optional: only WC4-H-PCB)

Mount the humidity sensor WC4-H-H (3-wire) at the centre of the lateral wall further from the heater at a height of approx. 1.5 m (see Figures 10 and 11). The sensor cables are also conducted through the cabin wall here.

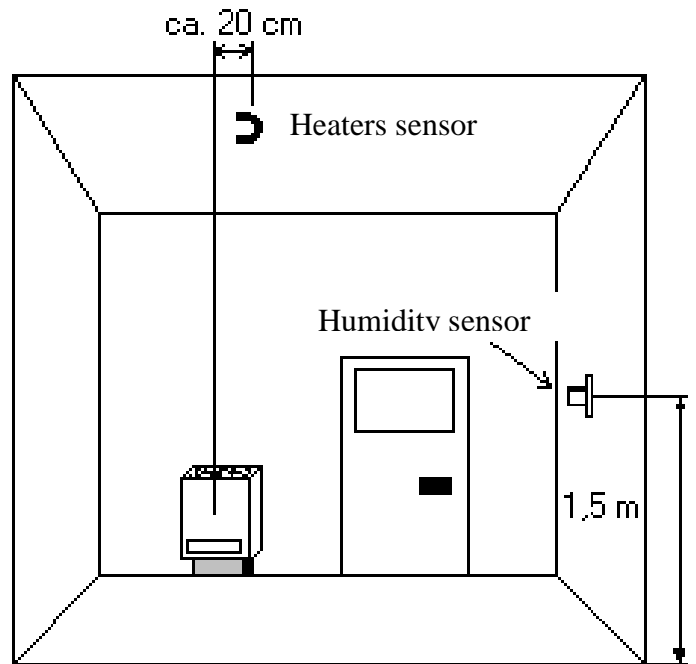


Figure 27: mounting of humidity sensors

2.3.3 Mounting of the bench sensor

The bench sensor (2-wire) is attached to the ceiling above the rear recliner bench (see Fig. 11).

Drill through the cabin ceiling with the aid of an 8 mm drill in accordance with Figure 9. Install the sensor cables through the shaft which has just been drilled.



Ensure that no cable is damaged when feeding in the sensor cables.

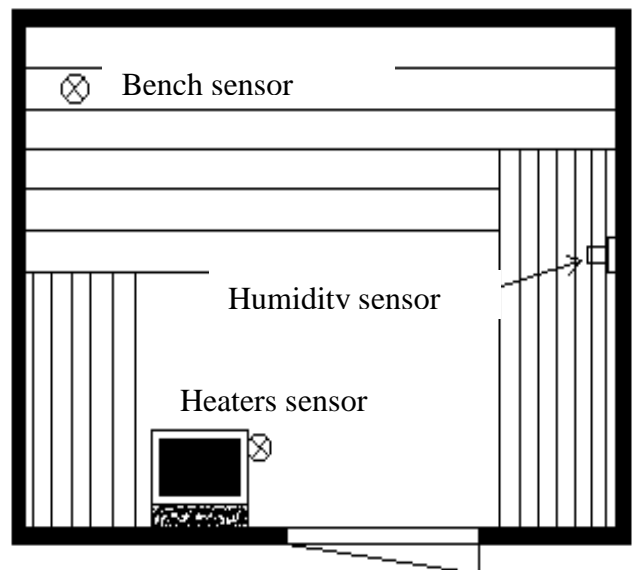


Figure 28: mounting bench sensors



You can recognise the respective circuit (temperature sensor circuit or temperature limiter circuit) from the marking on the sensor cables

2.4.0 MOUNTING OF THE LIGHTING

When installing the lighting it must be ensured that these are installed **as far as possible from the sauna heater** (preferably in the opposite corner).



The sauna light must conform to the 'splashproof' protection class.



The sauna light must be designed for an ambient temperature of 140°C.



You can connect the cabin light to the power unit of the Wave.com4 sauna control unit.

2.5.0 MOUNTING OF THE OPERATING UNIT

Use a commercially available \varnothing 70 mm hole cutter to mount the operating unit.

The internal display is affixed on the cabin wall at the end of the cable duct.



The cabin wall may only be drilled as far as the insulation material.



The RJ10 4/4 may only run to the power unit between the external and internal wood panelling.



The Wave.com4 operating unit is appropriate for installation inside or outside of the cabin (it must conform to the ambient parameters in accordance with the technical data in these operating instructions)!



Never remove the plastic protective cover on the reverse of the operating unit!



Interior view

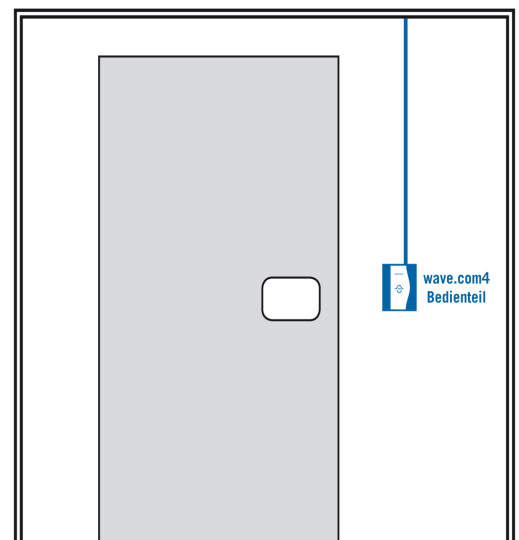


Figure 29: mounting of the operating unit

Instructions for assembly and use, only for experts

Affix the operating unit yourself to the cabin wall with the supplied screws.

2.6.0 FINAL MOUNTING (COMPONENTS AND CABLES)

When all cables are installed, fix the components together, strictly observing these operating instructions (observe the connection schedule in these operating instructions).



Before you connect further modules to the Wave.com4 sauna control unit, first check whether the power unit and the pertaining cables are completely installed.

3.0.0 SAUNA OPERATION



3.1.0 CHANGING LANGUAGE




The following languages are available:

- German
- English
- Italian
- Dutch
- French

Your control unit must be in stand-by mode ( symbol illuminates).

Proceed as follows to change the language:

Press and hold down the  and  keys. This takes you to the automatic switch-off menu.

Change to the language menu with the  button. Make your selection here using the  keys. Confirm your selection here with the  key.

3.2.0 OPERATING AND DISPLAY ELEMENTS



The operating unit looks as depicted below:


- **3-digit seven segment display**
- **Symbols (LEDs)**
- **Film keys**



3.3.0 SWITCHING ON

The control unit must be connected to the power supply.

The left symbol  illuminates constantly. If the time symbol  also illuminates, the automatic switch-on or pre-set time (programming see Point 3.12.0 of these operating instructions) is active and the control unit will switch on after the displayed time.

Pressing the  key switches the control unit on and the cabin light connected to the control unit starts to illuminate. The operating mode (see Point 3.4.0 of these operating instructions) must then be selected.

Instructions for assembly and use

3.4.0 SELECTING OPERATING MODE

After switching on (see Point 3.3.0 of this operating unit) select one of the following modes with the



keys:

- “**HUM**” = humid operation:

- **Timed humidity:**

Timed humidity offers no utilisation of a humidity sensor (regulation according to per cent humidity). You can select humidity steps (0 to 99) in this operating mode. The timed humidity is activated by a D-sensor, the D-sensor is available optionally (contact a sauna dealer you trust).



Timed humidity can be executed with the optional components WC4-H-PCB, WC4-H-F2 and the D-sensor.

- **Standard humidity operation:**

Standard humidity operation offers the utilisation of a humidity sensor (regulation according to per cent humidity).



Standard humidity operation can be executed with the optional components WC4-H-PCB, (WC4-H-F2) and WC4-H-H.



To this end, please observe the humidity - temperature characteristic curve below (EN60335-2-53 compliant).

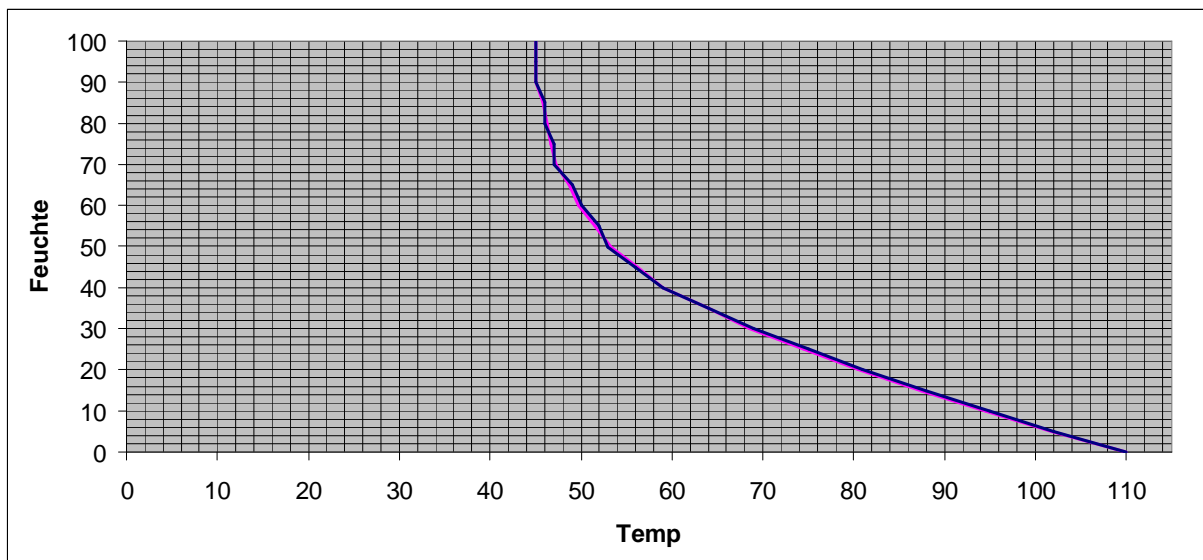



Figure 30: humidity - temperature characteristic curve

- “**FIN**” = Finnish (dry) operation

Instructions for assembly and use

Confirm your selection with .

The  **temperature symbol** illuminates.
The sauna control unit now starts with the configurations last executed (see Point 1.3.0. of these operating instructions) or with the standard values (factory settings).





and begins to heat with the last settings of the respective operating mode.

3.5.0 WAVE.COM4 SAUNA- DEFAULT SETTINGS

Operating mode:	FIN
AutoDisplay:	OFF
Remote start:	OFF
Timer beep:	ON
Water deficiency beep:	OFF
Target temperature:	
FIN	75°C
HUM	50%
Temperature rectification:	0°C
Humidity rectification:	0%
Airing programme:	
Target temperature:	80°C
Drying time:	
	<ul style="list-style-type: none">• Heating + ventilator [15 minutes]• Ventilator [15 minutes]
Switch-on time (maximum):	4 hours
Automatic switch-on:	
1 hour	
OFF	

Instructions for assembly and use

3.6.0 SET TEMPERATURE

With the  key change to the  symbol and set the desired temperature with the  and  keys.

After approx 3 secs. (without pressing the keys again), the control unit automatically reverts to the previous display (actual temperature).

Possible temperature range:





FIN <110°C

HUM <70°C

CAUTION!

The range changes when a correction value is specified for the temperature (see 3.12.3). After switching on the sauna heater, it is heated up until the desired temperature is attained.

Ventilator:

The ventilator is activated by first pressing the  key followed by the  key (optional humidity extension). The ventilator is deactivated again by first pressing the  key followed by the  key.



The ventilator can only be switched on or off in the temperature setting mode.

3.7.0 ECO MODE (THE MODE WHICH HELPS TO SAVE ENERGY)

This new ECO mode helps you to save energy. If you wish to take a break after entering the sauna, you can now do so. Your Wave.com4 sauna control unit with ECO function now enables you to attain this same cabin temperature again after your break.




The following functions are possible:

- ECO20 for a 20-minute break from the sauna
- ECO40 for a 40-minute break from the sauna
- ECO60 for a 60-minute break from the sauna




Activate the ECO mode as follows:

Instructions for assembly and use




Navigate to Temperature Setting in the menu (see Point 3.6.0 of these operating instructions).


When you are in the Temperature Setting menu, press and hold the  keys). Select your choice with the  key. Confirm your selection with the  key.


3.8.0 ELECTRONIC HOUR GLASS



Change to the  symbol (time interval, electronic hour glass) with the  key and set your desired interval with the  keys. The hourglass can notify you via an acoustic signal (buzzer is integrated into the power unit), that your desired interval (run time) has elapsed. The acoustic signal can be switched off (see Point 3.12.5 of these operating instructions).

3.9.0 DIMMING THE CABIN LIGHT




Change to the  symbol (light brightness) with the  key and set the desired brightness with the  keys.

Switch the cabin light off by **briefly** pressing the  key.

Switch the cabin light on again (0% dimming) by **pressing and holding** the  key.

Dim the cabin light (power) by pressing and holding the  or  key.

3.10.0 SETTING HUMIDITY (OPTIONAL: WC4-H-PCB)

Change to the  symbol (actual or desired humidity) with the  key and set your desired humidity with the  keys.

After approx. 3 secs. (without pressing the keys again) the control unit automatically reverts to the previous display (actual temperature).

Humidity operation:

Humidity operation is dependent on sauna temperature. This is why humidity operation works up to a sauna temperature of 70°C.

Instructions for assembly and use

Possible humidity values (dependent on sauna temperature) can be found in the graphic below.


Observe the standard curve (see Point 3.4.0 of these operating instructions).





CAUTION!

The water evaporator must be fitted with a safety switch in the event of water deficiency.


3.11.0 SWITCHING OFF

By pressing the  key, you reach the operating mode selection menu (see Point 3.4.0 of these operating instructions).

Change to the **OFF** menu point with the  keys.

Confirm your selection with the  key.

If you have executed climate operation/humidity operation before switching off the Wave.com4 sauna control unit, the control unit will start the **airing programme** after the aforementioned action (see Point 3.12.7 of these operating instructions). **Dry** now appears on the operating unit (airing programme is executed). When the airing programme ends (run time: 2x 15 minutes) the Wave.com4 sauna control unit switches off automatically.


The cabin light and heating device are now deactivated and the  symbol illuminates.






Subsequently disconnect the Wave.com4 sauna control unit from the mains using the main switch in order to prevent an unwanted heating process from occurring (e.g. children pressing keys on operating unit).

3.12.0 PROGRAMMING

3.12.1 Automatic switch-on


Activate the main switch which disconnects the Wave.com4 sauna control unit from the mains after use at all poles. The  symbol on the operating unit illuminates.



Instructions for assembly and use

The automatic switch-on can be programmed by simultaneously pressing (3 secs.) the  and  keys. Now set a time interval in hours (1 to 24) with the  keys. Change to the operating mode setting menu with the **MODE** key.



Here you can select the operating mode which your Wave.com4 sauna control unit starts in after the programmed time interval has elapsed.


Confirm your selection with the  key.




The automatic function of the Wave.com4 sauna control unit is active when the  and  symbols illuminate. The operating unit display now shows you the remaining time in hours until the Wave.com4 sauna control unit starts the operating mode pre-programmed by you.




The automatic switch-on mechanism is deactivated in the event of power failure or manual switch-on.

3.12.2 Automatic switch-off

Activate the main switch which disconnects the Wave.com4 sauna control unit from the mains at all poles after use. The  symbol on the operating unit illuminates.

The automatic switch-off can be automatically programmed by simultaneously pressing (3 secs.) the  and  keys. Now set a time interval in hours (1 to 24) with the  keys.

Confirm your selection with the  key.

3.12.3 Temperature rectification



When only using the components WC4-B-L and WC4-B-F1 for the Finnish sauna, the Wave.com4 sauna control unit only regulates according to the heater sensor. The temperature measured above the heater deviates from the temperature on the bench.

The use of components WC4-B-L, WC4-B-F1, WC4-H-PCB and WC4-H-F2 is recommended for the Finnish sauna for exact temperature regulation!


Instructions for assembly and use






Using these components enables your Wave.com4 sauna control unit to regulate according to an exact temperature value (regulation according to the bench sensor).

You have the option of correcting the temperature value displayed. This is possible within a range of $\pm 9^{\circ}\text{C}$. Proceed as follows to do so:

Change to the  symbol (**thermometer symbol**) with the  key.

Press and hold the  keys. This enables you to access the temperature settings menu.

The symbol flashes when the  keys are pressed simultaneously for at least 3 seconds. Then press and hold the  and  keys to confirm your selection.

Your value inputted here corresponds to Δt in the graphic below.



A temperature rectification value of “0” is set as standard.

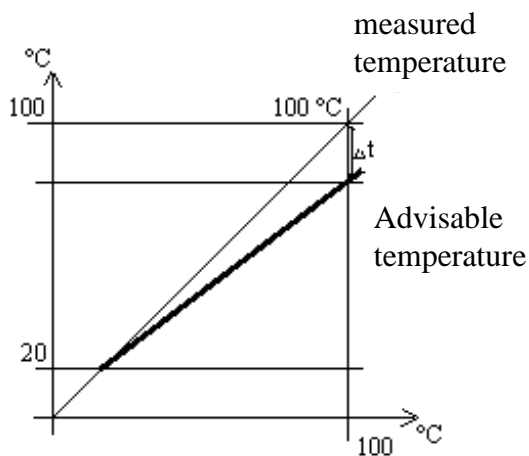





Figure 31: temperature rectification


3.12.4 Hourglass: change to time interval

Change to the  symbol (**time symbol**) with the  key. The time (minutes) which you specify here with the  keys is counted backwards. When this specified time has elapsed an acoustic signal sounds (programming see Point 3.12.5 of these operating instructions).


3.12.5 Programming of the acoustic signal


You can activate/deactivate the acoustic signal (produced by the integral buzzer on the base board):

Change to the **time symbol**  with the **MODE** key.

By simultaneously pressing the  keys for at least 3 seconds you reach the settings menu for programming the acoustic signal. You can now see the number of the operating mode on the operating unit:

Unit	Operating mode	Function
0	Soft	No acoustic signal
1	<u>Hourglass (= standard)</u>	<u>Hourglass</u> active for 1 sec. after time elapsed
2	Water deficiency	Continuous tone in the event of water deficiency
3	Hourglass + water deficiency	Both signals active
4	Remote control	See Point 3.12.5.1 and 3.12.5.2
5	Remote control + hourglass	See Point 3.12.5.1 and 3.12.5.2

Change to the desired operating mode with the  keys.

Confirm your selection either with the **MODE** key or the  key.

3.12.5.1 Remote start (only for experts)



You are acting at your own discretion. Please observe the standard regulations in this regard.



Remote start can only be executed with the optional humidity expansion board WC4-H-PCB.



Remote start requires Port Res.5 on component WC4-H-PCB. As this port is used inter alia for the water deficiency function of the evaporator (if the combi operation of the sauna is desired), remote start cannot be used when Res.5 is used by the water deficiency function of the evaporator

Instructions for assembly and use



- The Port Res.5 Port on the WC4-H-PCB component is a 230V input
- Both continuous voltage and impulse voltage (230V) can be used (see Point 3.12.5.2 of these operating instructions).

3.12.5.2 Remote start programming

When you select operating modes 4 or 5, you can make additional settings.

Here you can specify to the control unit whether the Wave.com4 sauna control unit should remain switched on when the remote contact voltage has ceased:

Switch on (Select = "on")
Switch off (Select "off")


Confirm your selection either with the  or  keys.

3.12.6 Display: automatic relaying



The operating unit display can be programmed to automatic relaying.

In this mode, the display alternately shows you temperature [°C], time [hours], brightness [%] and the humidity value [%], insofar as the optionally available components for climate operation of the Wave.com4 sauna control device are used (see Point 1.3.0 of these operating instructions).

Change to the  symbol (**light brightness**) with the  key.

Simultaneously pressing the  keys for at least 3 seconds will take you to the settings menu for the automatic relaying of the display of your operating unit

Switch on/off the automatic relaying with the  or  keys.



Confirm your selection either with the  or  keys.

The following setting can also be made:



Where the optional LED components are used (see Point 1.3.0 of these operating instructions) you can also specify to the Wave.com4 sauna control unit whether the cabin light should illuminate at the same time as the LED colour lamp or not.

- Simultaneous operation = ALL
- Single operation of cabin and LED light = LED

Confirm your selection with the  or  keys.

Instructions for assembly and use





The colour relay module can be switched independently of the cabin light using its own operating unit!




If a connection exists between the optional LED board WC4-CL-R/L and the WC4-B-L using a 4 or 6 pole data cable (RJ10 4/4 or RJ12 6/6), the LED colour light is switched when the cabin light is deactivated.

3.12.7 Airing programme/ humidity rectification

Change to the  symbol (**humidity symbol**) with the  key.

Simultaneously pressing the  keys for at least 3 seconds will take you to the settings menu (the  symbol flashes).





You can now set the rectification value with the  keys.



You have the option of rectifying the displayed temperature value. This is possible within a range of $\pm 9^{\circ}\text{C}$.




A temperature rectification value of “0” is set as standard.

Relay with the  key. The    symbols illuminate. You can now set the airing with heating and ventilator (0 to 2 hours possible).

Relay with the  key. The   symbols illuminate. You can now set the airing without heating, but with ventilator (0 to 30 minutes possible).

Relay with the  key. The  symbol illuminates. You can now set the airing temperature in a range of between 70 °C and 90 °C.

Confirm your settings with the  key.

3.12.8 Several operating units on the bus



You can in practice connect max. 3 operating units and in theory (Y-adapter RJ12 6/6-optional: WC4-SL-EXT) 4 operating units to the bus (Port RJ10 4/4).



The component WC4-B-L has 2 RJ10 4/4 sockets and 1 RJ12 6/6 socket.




If you use several operating units, you must assign each operating unit (maximum 3 operating units) a bus address. Address 0 is the standard value. Each address can be used only once or may not be assigned to multiple operating units.

The address can be changed as follows:


Unplug the bus/supply cable of the operating unit.




Press and hold the  keys on the unplugged operating unit and meanwhile plug the data cable into the relevant port on component WC4-B-L.

You can now see the address assigned to this operating unit flashing.



Change the address with the  keys (address 0-3 possible) when several operating units are used.

Confirm your selection with the  button.



When the aforementioned settings have ended, the Wave.com4 sauna control unit must be disconnected from the mains and reinitialised (address recognition occurs when the Wave.com4 sauna control unit is started up).



Sauna and colour light operating units do not have the same address allocation. They are thus completely independent of one another.

3.13.0 SAUNA CONTROL UNIT: AUTOMATIC SWITCH-OFF

For safety reasons, your Wave.com4 sauna control unit switches off automatically as standard after 4 hours. The switch-off time can be programmed in accordance with Point 3.12.2 of these operating instructions.

3.14.0 SAFETY SWITCH-OFF

Your Wave.com4 sauna control unit is **equipped with a safety cut-out** via a safety temperature limiter. This safety device is located in the **sensor casing of the heater sensor** which is located above the sauna heater. **Should the sauna heater fail to switch off** after attaining the desired temperature due to a defect of any kind, **the safety temperature limiter automatically interrupts the electrical circuit at approx. 139 °C and switches the sauna heater off.**



Should a **cut-out of this type** occur, **the safety temperature limiter must be exchanged and an expert consulted under all circumstances.**

3.15.0 FAULT OVERVIEW/ FAULT REPORTS

Your Wave.com4 sauna control unit is equipped with sophisticated diagnostic software. The self-test is performed during control unit start-up. The system statuses are verified both during this test and while using the sauna control unit. As soon as the diagnostic software recognises a fault in the system, the Wave.com4 sauna control unit switches off automatically. In this case, all operating symbols of the operating unit flash and a fault number appears. The following table gives information on possible faults and their cause if necessary.



Inform service personnel of the fault notification. This can help to locate the error and find a solution more quickly if necessary.





In the event of a fault, a reboot may be useful and may rectify the fault. To do this, disconnect the control unit from the mains at all poles (deactivate main switch).

Instructions for assembly and use

Fault number	Description	Rectification/cause
-5	No operating unit connected.	No operating unit connected or poor contact.
-10	Operating unit no longer connected after at least one was recognised during launch.	Verify contact to operating unit.
-21	Heater temperature sensor broken.	Defective temperature sensor or poor contact.
-22	Heater temperature sensor short-circuiting.	Defective temperature sensor or short circuit.
-24	Bench temperature sensor broken.	Defective temperature sensor or poor contact.
-25	Bench temperature sensor short circuit.	Defective temperature sensor or short circuit.
-26	Humidity sensor broken.	Defective humidity sensor or poorly/wrongly connected.
-27	Humidity sensor short-circuiting.	Defective humidity sensor, poorly/wrongly connected or short circuit.
-30	Thermal fuse defective.	Defective heater sensor, poor contact or thermal fuse not connected. Inform service!

3.16.0 VERSION DISPLAY

By simultaneously pressing the **MODE**,  and  keys in stand-by mode, the software version number of the power unit is displayed on the operating unit for 3 seconds. The number "14" appears on the 7 segment display of the operating unit, for example.

If you press the **MODE** key again during this time, the software version number of the operating unit is displayed with a preceding "P" (for panel), to distinguish it from the base unit, e.g. "P14".

When the time has elapsed, the display reverts to stand-by mode.

4.0.0 Colour function overview (optional LED colour lamp WC4-CL-R)



Point 3 of these operating instructions relates to the LED colour light option (see Point 1.3.0 of these operating instructions).



Figure 32: LED colour operating units in the available colours


4.1.0 COLOUR CODING


The following colour coding is assigned to the digits:

0.....dark, off	5.....green
1.....red	6.....green, blue
2.....red, yellow	7.....blue
3.....yellow	8.....red, yellow, green, blue
4.....yellow, green	



4.2.0 SWITCHING ON COLOUR

The Wave.com4 sauna control unit must be connected to the mains.

The  symbol (ready for operation) illuminates on the operating unit of the LED colour light.

By pressing the  key the control unit for the LED colour light is activated and the control unit automatically changes to the last executed operating state (automatic or manual).

4.3.0 AUTOMATIC COLOUR MECHANISM (MODE)

As soon as you switch on the control unit, the  (ready for operation) and  (Automatic mechanism) symbols illuminate.

The digit in the display shows the active colour (see 3.2.0).


Instructions for assembly and use

After a programmable time the control unit automatically changes to the next highest colour.



The  keys allow the colour to be relayed manually.





When the  keys are pressed simultaneously, the colour transition period of the colour LED module can be programmed (see colour LED module operating instructions).

You can access the programming for the automatic mechanism time via the  button.


You can switch off completely with the  key.

4.4.0 COLOUR AUTOMATIC MECHANISM- TIME PROGRAMMING


Switch on the control unit with the  key. You can then access the “colour automatic mechanism time programming” menu with the  key.


The 7 segment display shows you the time remaining (in minutes) for the active colour until the next change.




The interval time is shortened or lengthened on a one-time basis with the  keys. The next change then occurs again with the programmed standard interval time.






You can programme the standard interval time by simultaneously pressing the  keys (see Point 3.5.0 of these operating instructions).

The  key takes you to manual operation (see Point 4.6.0 of these operating instructions).

Pressing the  key switches the device off.


4.5.0 PROGRAMMING COLOUR INTERVAL TIME


As soon as you switch the control unit on, the  (ready for operation) and  (Automatic mechanism) symbols illuminate and the  (time) symbol flashes.

The 7 segment display shows the programmed standard interval time (in minutes).



Instructions for assembly and use




The  keys enable you to lengthen or shorten the interval time. Each change is then made with this programmed standard interval time.


You can revert to “colour automatic mechanism time” with the  key (see Point 3.4.0 of these operating instructions).

4.6.0 MANUAL OPERATION: SETTING COLOUR

As soon as you switch on the control unit, the  (**ready for operation**) and  (**manual operation**) symbols illuminate.

The digit displayed shows you the active colour (see Point 3.1.0 of these operating instructions).


You can change the colour with the  keys. The newly selected colour illuminates until another colour is selected or you switch off the control unit.

The  key allows you to switch into “colour automatic mechanism mode” (see Point 3.4.0 of these operating instructions).

The  key switches the device off.

4.7.0 SWITCHING OFF COLOUR

You can switch off the colour control by pressing the  key.

Only the left symbol  (**ready for operation**) illuminates. The colour control stores the last activated operating state (automatic or manual mode). When the colour control is switched back on again the last executed configuration is executed.

4.8.0 MULTIPLE COLOUR OPERATING UNITS


In order to be able to use several Wave.com4 sauna control units, you must assign each operating unit its own address. Each operating unit is assigned the address “0” at the factory.


It is possible to allocate addresses from 0 to 3.

It is possible to change the address as follows:


Instructions for assembly and use



6. Unplug the RJ10 4/4 (bus/supply cable) of the operating unit.

7. Keep the  keys pressed down simultaneously.

8. Plug the RJ10 4/4 supply cable of the operating unit in again (keep the  keys pressed down).

9. This will take you to the address allocation menu. The address currently allocated to your operating unit is displayed here.

10. Change the address with the  keys.

Confirm your entry with the  key. By your entry with the  key you can reach the advanced “Master/Slave colour operating unit programming” menu (see Point 3.9.0 of these operating instructions).

4.9.0 PROGRAMMING MASTER/ SLAVE OPERATING UNIT

The operating unit can be used in two operating modes:

- Slave operation:



Select “SLA”, standard setting, with sauna base unit as master.



This mode must be used for the control of the colour relay module

Single/Master operation:

Select “SIN”, without sauna base unit.

Setting for pure colour-LED-control without sauna function (see Colour LED module operating instructions)

Make your selection with the  or  keys.

Confirm your selection with the  key. By your entry with the  key you can reach the advanced “LED/REL-Menu programming” menu (see Point 3.10.0 of these operating instructions).

4.10.0 LED/ REL PROGRAMMING

You can make the following setting in this menu:

Adaptation of the menu to control of the colour relay module or to the colour LED module

Difference:

The relay module has 8 settable colours.



The settings are only effective on the colour operating unit which is allocated the address 0.



Make your selection with the  or  keys.



Confirm your entries with the  key.



If the operating unit is used in slave operation, the sauna base unit must absolutely be rebooted (disconnect the mains power supply for a short time) to ensure that the new operating unit is recognised.



Connected peripherals are recognised on start-up of the Wave.com4 sauna control unit.



Only two colour operating units can be connected with the same address.



The sauna and colour operating units are address-independent of one another. A sauna operating unit can thus have the same address as a colour operating unit.

4.11.0 VERSION DISPLAY



By simultaneously pressing the ,  and  keys in stand-by mode of the Wave.com4 sauna control unit, the software version number of the WC4-B-L (power unit Wave.com4 sauna control unit) is displayed for a 3-second period, .e.g. "14"

Instructions for assembly and use, only for experts

MODE

If the **MODE** key is pressed again during this time, the software version number of the operating unit is displayed with a preceding "P" (P for panel, to distinguish it from the base unit), e.g. "P14".

If you operate the operating unit in Single/Mastermode (without base unit), only the operating unit version is displayed.

After the 3 seconds has elapsed, the display automatically reverts to stand-by mode.

5.0.0 IMPORTANT FOR INSTALLATION



This description is supplied with the assembly instructions for the sauna cabin. Observe all cabin assembly instructions.



The control unit may only be electrically connected by authorised specialist personnel in accordance with the provisions of local power companies. Only use the original parts.



Note that standard EN60335-2-53, table 101 prescribes a maximum heater power rating regardless of the room size.



The control unit may only be connected subject to strict compliance with these instructions.



Only use the original cable and original components supplied. Only these components ensure strict compliance with the standards (wire cross-section, insulation, temperature class, etc.)!



Inspect all electrical cables for damage before and after installation.



Ensure that all damaged leads/cables are immediately replaced by a qualified specialist or service company.



sentiotec GmbH accepts no liability for damage or consequential damage caused by damaged components or the utilisation of non-original components!



The control unit is only ready for operation when all electrical and construction works are complete.

WE DO IT FIRST.



Ensure electrical connection in compliance with the standards in accordance with the connection schedule in these operating instructions!

6.0.0 ELECTRICAL CONNECTION



The safety information provided below must be precisely observed.

IMPORTANT!

The Wave.com4 control unit must be disconnected from the mains at all poles and safeguarded from unintentional switch-on until all electrical work is complete. The power unit must be connected in accordance with the standards and by an authorised specialist (electrician). Cables used must conform to standards and local provisions.

IMPORTANT!

In accordance with standard EN60335 cabin light and heater must possess separate electrical supply cables. As the power board of the sauna control unit is supplied via the light connection, a light supply cable must absolutely be executed (it must be interconnected at the same residual current operated circuit breaker).

IMPORTANT!

A three-pole off switch with a 3 mm contact opening must be provided for in the installation. (Generally assured by the fuse).

6.1.0 ELECTRICAL CABLES

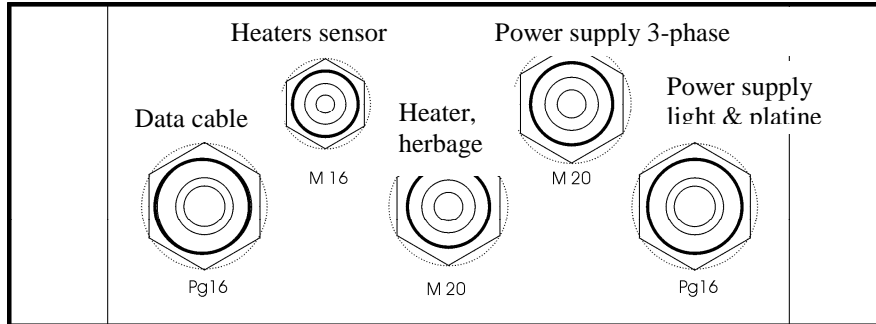


Find out about the necessary wire cross-sections from your power supplier or electrical installation company. Also heed the instructions in the heater instructions.

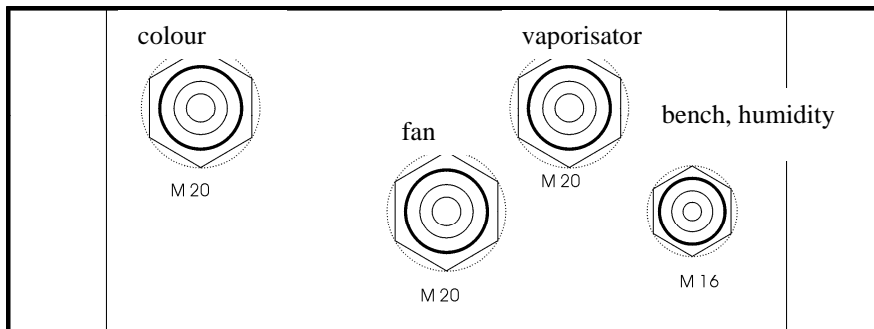
6.2.0 OVERVIEW OF PG SCREW JOINTS

PG additional screw joints:

Right:



Left:



“Data cable”:



Remove the seal (within the PG screw joint) and thread max. 3 data cables within a PG screw joint. Then seal the screw joint.

6.3.0 OVERVIEW OF WC4-B-L POWER UNIT

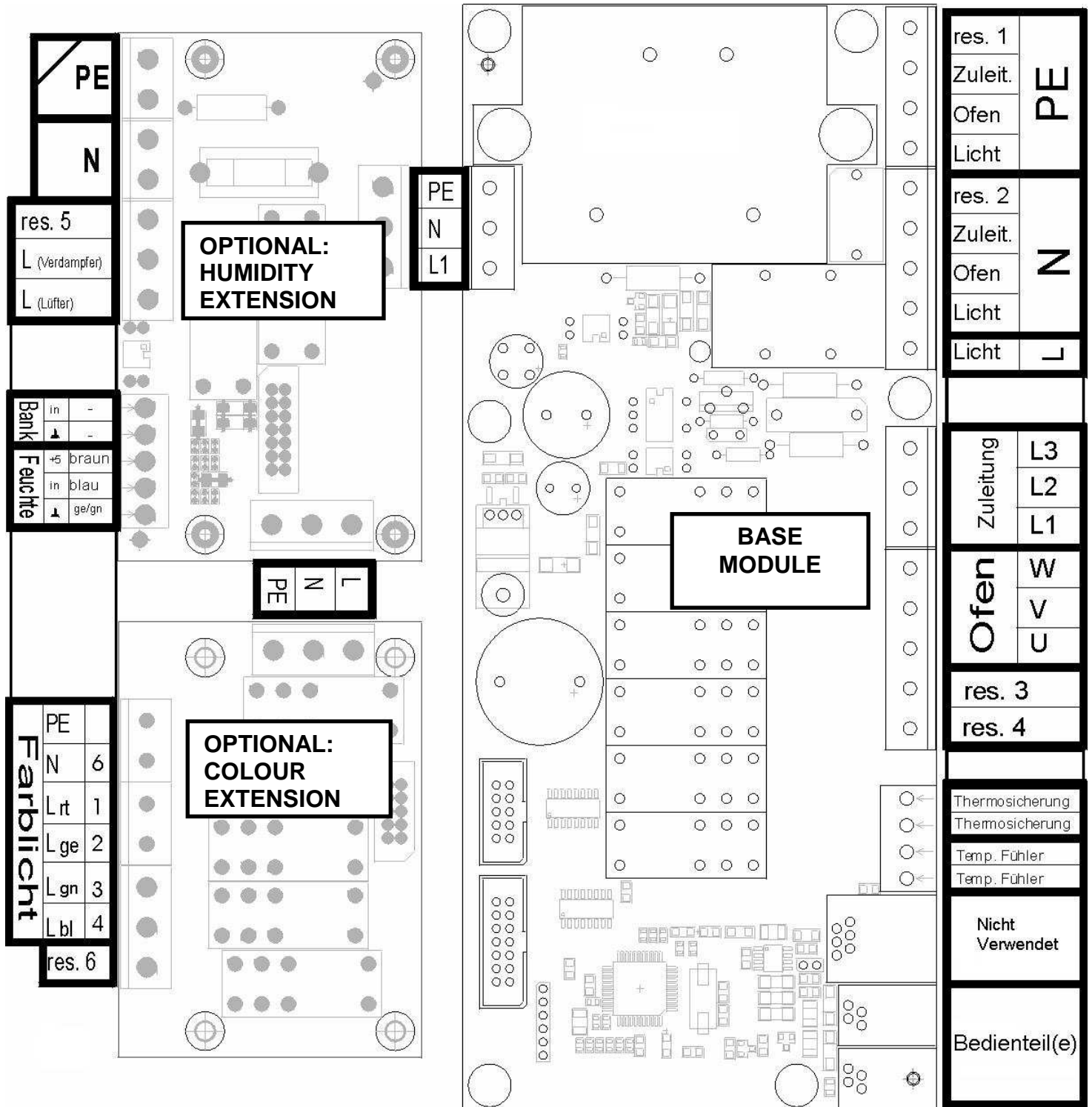
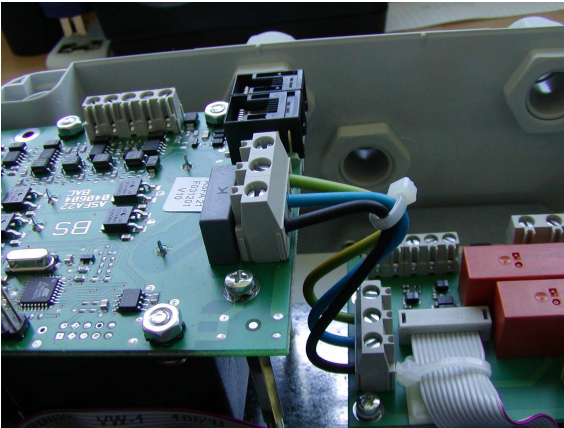


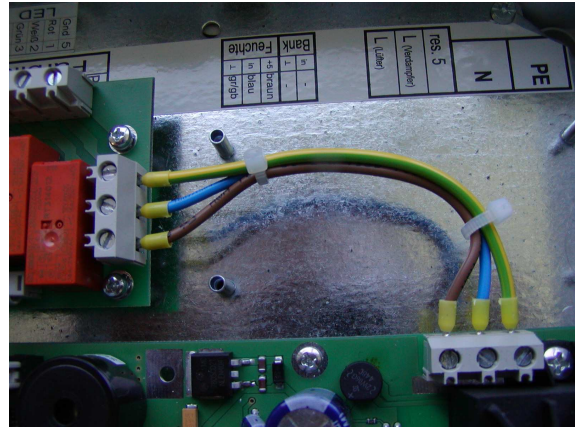
Figure 33: aerial view Wave.com4 power unit

6.4.0 WC4-B-L CONFIGURATION (WAVE.COM4 POWER UNIT)

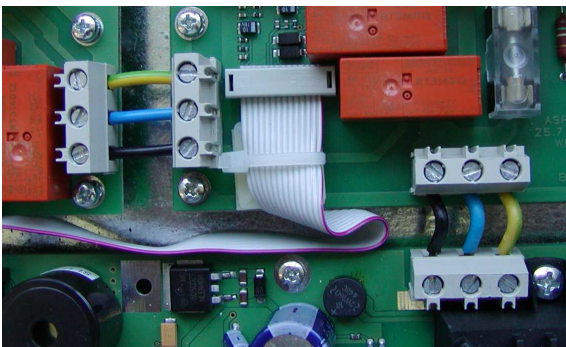
As the supply cables of the additional modules (LED- or 230 V-colour module) change dependent on the presence of the same, it must be ensured that these possess an adequate conductor cross-section (1.5 mm^2) and that these supply cables of the respective boards are additionally interconnected by means of cable ties as apparent from the following images.



LED colour module
with humidity
module



230 V-colour module without
humidity module



230 V colour module
with humidity module

6.4.1 Operating unit

The WC4-B-L (Wave.com4 sauna control power unit) has the following data connections:

- 2 pcs RJ10 4/4
- 1 pcs RJ12 6/6



4-pole cable may not be inserted into 6-pole socket, as otherwise the operating unit will be damaged.



Do not use force under any circumstances.

6.4.2 Heater sensors



Thermal fuse
Thermal fuse
Temp. sensor
Temp. sensor

The cables must be properly inserted into the casing via the PG screw joint and connected.



Heed the cable labelling under all circumstances.



Wrongly connected cables can cause irreparable damage.

6.4.3 Res.3 and Res.4



Res. 3
Res. 4



The mains phase L1 is looped through here. **A clamp must be placed between the terminals** for this purpose.

6.4.4 Connect sauna heating device



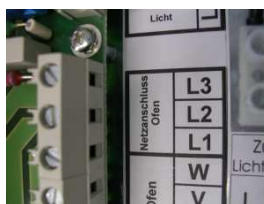
L3 switched
L2 switched
L1 switched

These connections must be used for the 5-pole heater cable. Contact the earth wire and the neutral wire with the collective terminals 6.4.7 and 6.4.8.



Feed the cable through the construction screw joint provided for.

6.4.5 Network connection control device; heater supply cable



L3
L2
L1

These connections must be used for the 5-pole mains connection. The supply cable is directed sensibly from the building's electricity supply via an all-pole main switch. Contact the earth wire and the neutral wire with the collective terminals 6.4.7 and 6.4.8



Feed the cable through the construction screw joint provided for.

6.4.6 Mains connection for light and electronics



PE
N
L

These connections must be used for the 3-pole mains connection (supply cable for light and electronics).



Feed the cable through the construction screw joint provided for.

6.4.7 Connection of a cabin light



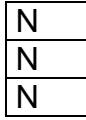
Light N- neutral wire
Light L- phase

These connections must only be used for 230 V~ (< 100 W) filament lamps. Contact an available earth wire with the collective terminals 6.4.9.



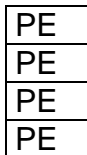
Feed the cable through the construction screw joint provided for.

6.4.8 Neutral wire collective connection (N)



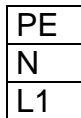
These connections are connected to one another on the conductor plate (collective terminal).

6.4.9 Earth wire collective connection (PE)



These connections are connected to one another on the conductor plate (collective terminal).

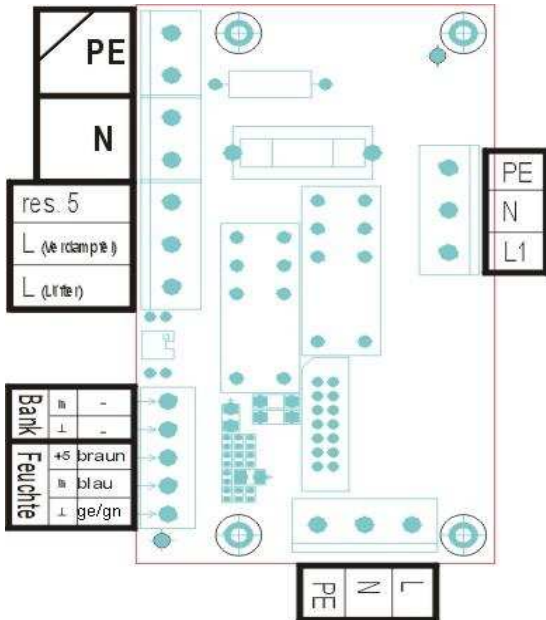
6.4.10 Internal main connection humidity board (optional: WC4-H-PCB)



These terminals provide the internal supply of the optional humidity extension.

6.5.0 TERMINAL CONFIGURATION HUMIDITY MODULE (OPTIONAL: WC4-H-PCB)

6.5.1 Voltage supply



The neutral wire “N” and the earth wire terminals “PE” are collective connections.

The right supply is internally connected to the base module (see 6.4.10).

The evaporator is conducted via the PG screw joint and connected to terminals $L_{(evaporator)}$, N and PE.



The evaporator itself requires its own cut-out for safety reasons in the event of water deficiency.

The water deficiency connection can be connected to “res. 5” of the optional humidity extension board WC4-H-PCB.

The ventilator cable is inserted via the cable screw joint and connected to terminals $L_{(ventilator)}$, N and PE. The outflow has a 4A slow fuse.

6.5.2 Humidity sensors and bench sensors

Bench sensors and humidity sensors must be connected to the terminals provided for on the humidity expansion board WC4-H-PCB.

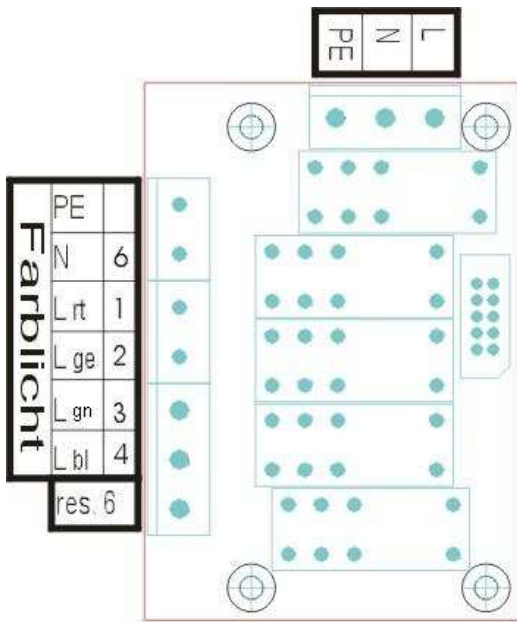


Assembly work on the sensors may only be undertaken when the Wave.com4 sauna control unit is switched off / disconnected from the mains at all poles and may only be undertaken by a qualified/ authorised technician.



The polarities must be observed under all circumstances (observe labelling). Incorrect polarities can lead to permanent damage.

6.6.0 CONFIGURATION OF COLOUR MODULE/ LED COLOUR MODULE



6.6.3 SUPPLY

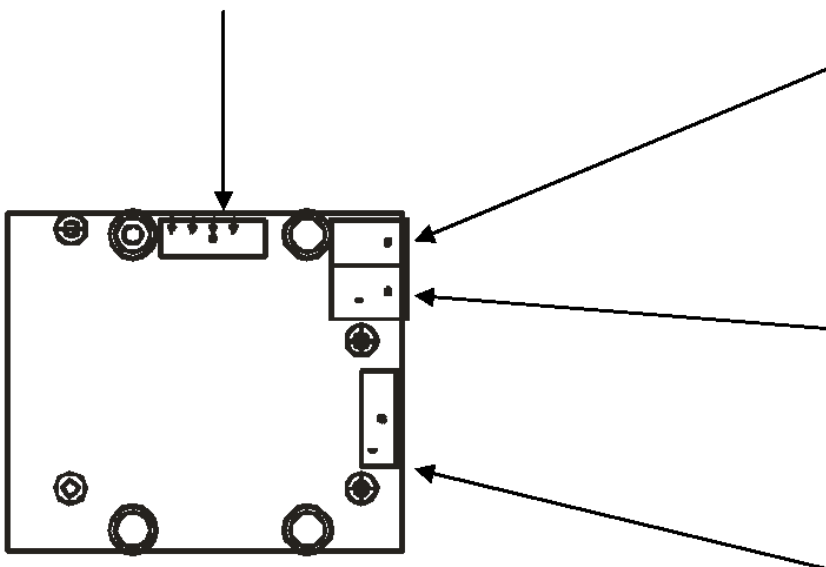
The upper terminals internally supply the optional colour extension. These are usually supplied by the humidity module directly above. Otherwise, Point 6.4.10 of these operating instructions must be complied with.

6.6.4 LAMP TERMINALS

The lateral terminals connect the colour lamps. The cables are laid from there to the lamps. A 6-pole cable should be laid. For individual lamp cables, the neutral wire connection must be gathered externally. The colours are allocated in accordance with the lamp module schedule. The “res. 6” connection is not applicable.

X4	Kabel Nr.
	4
	3
	2
	1
	5

X3	Modular Jack 4/4
4	Masse
3	CAN-
2	CAN+
1	+5V=



X2	Modular Jack 6/6
6	Masse
5	Masse
4	CAN-
3	CAN+
2	+12V=
1	+12V=

X1	Versorgung 230V~
3	PE
2	N
1	L (230V~)

Figure 34: socket configuration LED colour module

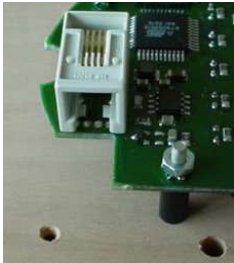
Instructions for assembly and use, only for experts



Further information on connection / socket configurations can be found in the operating instructions of the devices.

6.7.0 SOCKET CONFIGURATION OPERATING UNIT

Plug in RJ10 4/4 (supply and communication of the operating unit), until it audibly locks into place.



+5 V=
CAN+
CAN-
Mass

7.0.0 TECHNICAL DATA

7.1.0 WC4-B-L POWER UNIT

Mains connection	For 3 x 400 V ~ 50 Hz with L1-L2-L3-N-PE; 1 x 230 V ~ 50 Hz with L-N-PE; casing only for standard domestic connection with fuse and residual current device and main switch. The main switch must have a contact opening of at least 3 mm!
Connection operating unit	4-pole with 5 V= supply and communication; length: 3 m
Control voltage	Low voltage 5 V=
Mains cable	Typical 5 x 2.5 mm ² for heater (cross section see 6.1.0) Typical 3 x 1.5 mm ² for light and electronics
Light connection	With integrated phase control dimmer, for 2 (3)-pole connection of the 230 V filament lamp(s); max. 100 W
Heating connection	3 x 400 V~ 5-pole according to heater power rating up to max. 3 kW or 14 A per phase
Thermal fuse	Integrated into the temperature sensor as overtemperature protection; triggering temperature 139 °C
Temperature sensor	2-pole; semiconductor sensor -9 °C to 140 °C
Positioning accuracy	+/- 1 °C; +/- 1 min.
Power consumption	Operating mode FIN: max. 3 x 3 kW (heater) Operating mode HUM: max. 2 x 3 kW (heater) and max. 1 x 3 kW (evaporator) For light: max. 100 W
Ambient conditions	0 °C to max. 50 °C, max. 95 % rel. humidity, not condensing!
Casing	IP54
Fastening	Via 4 mounting holes for M3 for screwing on
Dimensions: L x W x H	300 x 210 x 100 mm
Weight	~1114 g unpacked

7.2.0 HUMIDITY MODULE (OPTIONAL)

Supply	3-pole with L1, N ,PE
Power consumption	12 V= / ~20 mA normal operation (~0.3 W)
Fuse	4 A slow for the ventilator outlet
Ambient conditions	0 °C – 50 °C, max. 95 % rel. humidity, not condensing
Casing	Open board in casing of power unit
Fastening	Board via M3 bolts on carrier plate
Dimensions: L x W x D	80 x 60 x 25 mm
Weight	~100 g unpacked

7.3.0 COLOUR MODULE (OPTIONAL)

Supply	3-pole with L1, N ,PE
Power consumption	Only in the case of lighting, max. 4 x 60 W
Fuse	Unfused or via 4 A slow when supplied by humidity module above
Ambient conditions	0 °C – 50 °C, max. 95 % rel. humidity, not condensing
Casing	Open board in casing of power unit
Fastening	Board via M3 bolts on carrier plate
Dimensions: L x W x D	100 x 60 x 25 mm
Weight	~150 g unpacked

7.4.0 (TECHNICAL DATA) OPERATING UNIT

Connection	4-pole with supply and communication cables
Power consumption	5 V= / < 100 mA normal operation (< 0.5 W)
Temperature	Display of actual and target temperature 30 °C to 110 °C (+/- 1 °C) according to programme
Time interval/el. hourglass	0 to 99 minutes with bleeper which can be switched off
Light dimmer	0 % to 100 % (+/- 2 %) for up to 100 W
Humidity operation (optional)	Display of actual and target humidity 0 % to 80 % rel. h. (+/- 5 %) according to programme
Ambient conditions	0 °C – 110 °C, max. 99 % rel. humidity, not condensing
Casing	Mounting box; board; light conductor for display; wooden front with temperature-resistant film
Fastening	Board via M2, 5 bolts on wooden front; reverse with mounting box
Dimensions: L x W x D	120 x 92 x 44,5 mm
Weight	~ 212 g without cable and unpacked

8.0.0 MANUFACTURER'S DECLARATION

Herstellereklärung sentiotec GmbH

Wir,



erklären hiermit für das nachstehende Erzeugnis:

**SAUNASTEUERUNG „Wave.com4“ mit
Leistungsteil WC4-B-L und
Feuchtemodul WC4-H-PCB und
Farbmodul WC4-CL-x* und
Bedienteil(e) WC4-B-x** und WC4-CL-x****

die Übereinstimmung mit folgenden Richtlinien

**Niederspannungsrichtlinie 73/23
i.d.F. 93/68/EWG neu: 2006/95/EG
EMV-Richtlinie 89/336/EWG
neu: 2004/108/EG**

Angewandte harmonisierte Normen:

Normbezeichnung

- | | |
|---|----------------------|
| 1 | EN 61000-6-3:2007 |
| 2 | EN 61000-6-1:2007 |
| 3 | EN 61000-3-2:2006 |
| 4 | EN 61000-3-3 A2 2005 |
| 5 | EN 60335-1:2006 |
| 6 | EN 60335-2-53:2003 |

A handwritten signature in black ink, appearing to read "Markus Wörmanseder", is written over a horizontal dashed line.

**Markus Wörmanseder
Geschäftsführer/ CEO, sentiotec GmbH**

Technische Änderungen, die dem Fortschritt dienen, behalten wir uns vor.
Diese Beschreibung wurde nach bestem Wissen erstellt. Bitte informieren Sie Ihren Händler oder uns,
falls Sie dennoch Fehler feststellen.
Vielen Dank!

x*: WC4-CL-L (Farblampe lang) und WC4-CL-R (Farblampe standard- passend für Gehäuse WC4-B-L)
x**: D- dunkles Holz, H- helles Holz, S- schwarz, W- weiss

9.0.0 WARRANTY CLAUSES

sentiotec GmbH is convinced of the quality of its products and we want you to benefit from this in future. We therefore offer a 5-year warranty on products for domestic use and a 2-year warranty on products for industrial use. The pre-requisites for this warranty are that:

- the control devices have been installed by an authorised specialist company;
- the devices are operated in accordance with the sentiotec operating instructions;
- the warranty claim is received by sentiotec within the warranty period.

The following are excluded from the warranty:

Defects or damage which have occurred due to use otherwise than as intended. The warranty period begins when the product is invoiced by the cabin manufacturer. Presentation of the original invoice is a pre-requisite for this. The warranty period is neither extended nor renewed by work done under warranty. If your device is defective, return it to your sauna retailer. Modifications undertaken without the explicit consent of the manufacturer will invalidate the warranty.

10.1.0 Disposal



Please dispose of packaging materials in accordance with the applicable disposal regulations. Used devices contain reusable materials. Therefore please do not simply take used devices to the nearest waste disposal site, instead ask your local council about recycling facilities.

sentiotec GmbH
world of wellness

Oberregauer Str. 48
4844 Regau
AUSTRIA



No. service query:

Return and complaint form

Please enclose this form and a copy of the invoice with the returned product

* Obligatory fields

Product*	Product number
Serial number (if available)	Date of purchase/invoice*
Order number (if available):	Retailer*
Customer contact person*	Customer telephone number*
Customer e-mail*	sentiotec contact person (if known)

Description of defect:*

wrong product

damaged upon delivery

I confirm that the product was installed and removed by a qualified expert*

Customer's signature

WE DO IT FIRST.