

# Installation- and Operating Instructions

## SAUNA *exclusiv STEAM* 9kW



### Sauna control 400V with humidity control

Item no. 3112600603

#### Function:

The electronic control unit SAUNA-exclusiv STEAM/COLOR consists of a power element and a flat control panel to be surface mounted. The power element comprises all connections for the power supply, sauna stove, steam generator, ventilator, cabin lighting, sensor and control panel. It controls the temperature in the sauna cabin within a temperature range of 30°C up to 110°C. With increased humidity operation (bio sauna) (30-70°C) the humidity of the air is additionally controlled by using a steam generator **ISI** SILVER-STEAM-Spezial. The sauna cabin is automatically dried after the bio sauna operation has stopped. For safety reasons, the maximum temperature in the cabin is limited to 139°C by an additional temperature safety device. With the built-in preselection timer the heating can be automatically switched on at a variable point of time for a heating period of maximum six hours. At the control panel you can switch on- or off the heating, cabin lighting and ventilator. The temperature- and humidity selection as well as the setting of the preselection timer are also carried out at the control panel. All operational data is indicated in the display of the control panel.

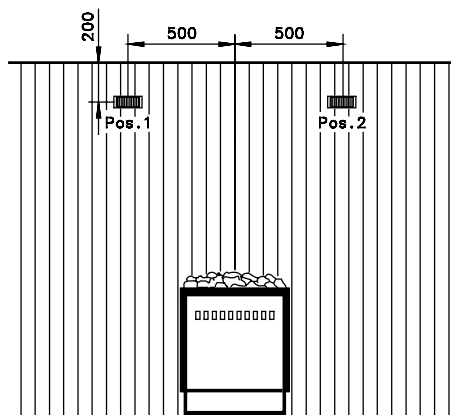
#### Technical specifications:

Dimensions:	Power element:	300x300x132mm <sup>3</sup>
	Control panel:	194x157x23mm <sup>3</sup>
Operating voltage:		3N AC 400V
Power consumption of the control:		ca.6VA
Breaking capacity:		9kW (AC1)
Range of control:	Sauna operation:	70-110°C
	Increased humidity operation (bio sauna):	30-70°C, 10-80%r.h.
Temperature limit:		139°C
System of protection:		Splash proof
Ambient temperature:		0-40°C

## Installation:

The control unit and the control panel are to be installed humidity protected **outside** the sauna cabin, depending on their system of protection. The control panel must be fixed near the sauna door. For the sake of splash guard warranty, the cable entry into the power element may only be carried out from the bottom.

The temperature sensor is to be installed near the cabin ceiling sideways of the stove, according to the illustration opposite. The side distance from the stove centre should be approx. 500mm. The distance to the ceiling should not exceed 200 mm. It should be avoided to place the temperature sensor near the exhaust opening, the door or the cabin ceiling.

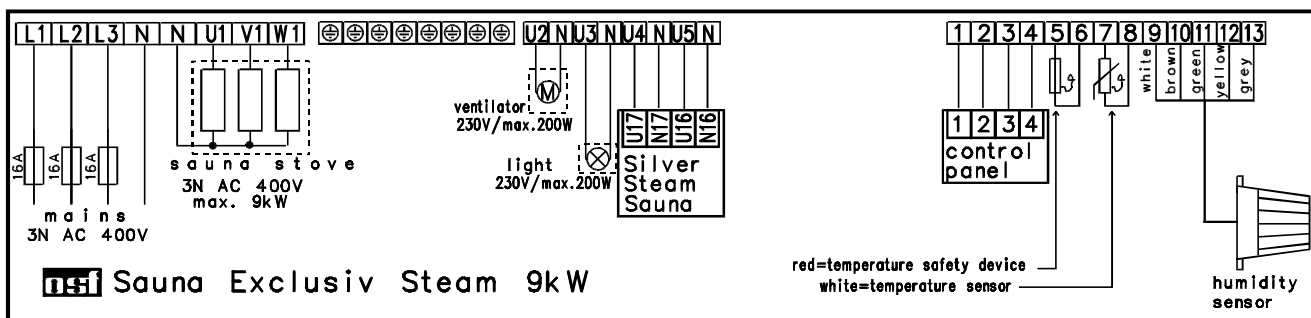


The humidity sensor should be placed at the height of the upper bench. It is to be protected against splash water.

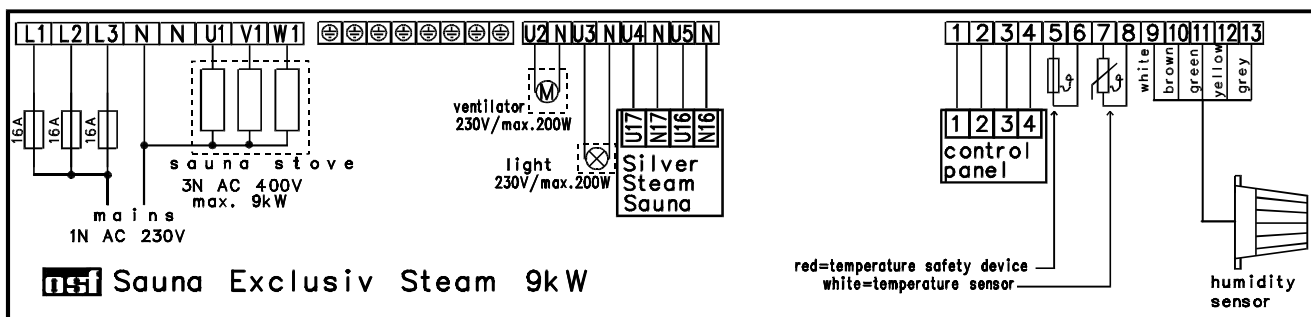
The power supply of the equipment must be effected via an all-pole main switch with a contact opening of at least 3mm. **Before opening the housing, it is absolutely necessary to switch the device to zero potential.**

## Electrical connection:

The electrical connection as well as any adjustment- and service work may only be carried out by an accredited electrical specialist! The enclosed connecting diagrams and the prevailing safety regulations are to be observed.



If there is only a single-phase 230V mains supply available, the connection is to be carried out according to the following connecting diagram:

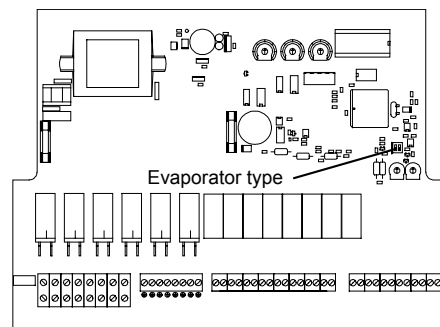


To ensure a constant distribution of the load to the three switching contacts in the control unit, the clamps U1, V1 and W1 in the control unit must **not** be bridged. The outer conductor must be separately led to the heating coils. Please note, that the neutral conductor of the heating carries the triple current of the external conductor in case of a single-phase power supply. **This current must not be carried via the clamps on the circuit board.** The neutral conductor of the heating must be externally connected with the neutral conductor of the mains power supply!

The electronic control is protected by a 0.16A micro-fuse placed on the circuit board. The connected consumer are not protected by fuse in the control unit. The short-circuit protection must be ensured by suitable **customer-provided** fuses (max. 16A).

In bio sauna operation clamp U4 carries voltage and switches the steam generator SILVER-STEAM-Spezial to readiness for working. In bio sauna operation clamp U5 carries voltage, if steam is required.

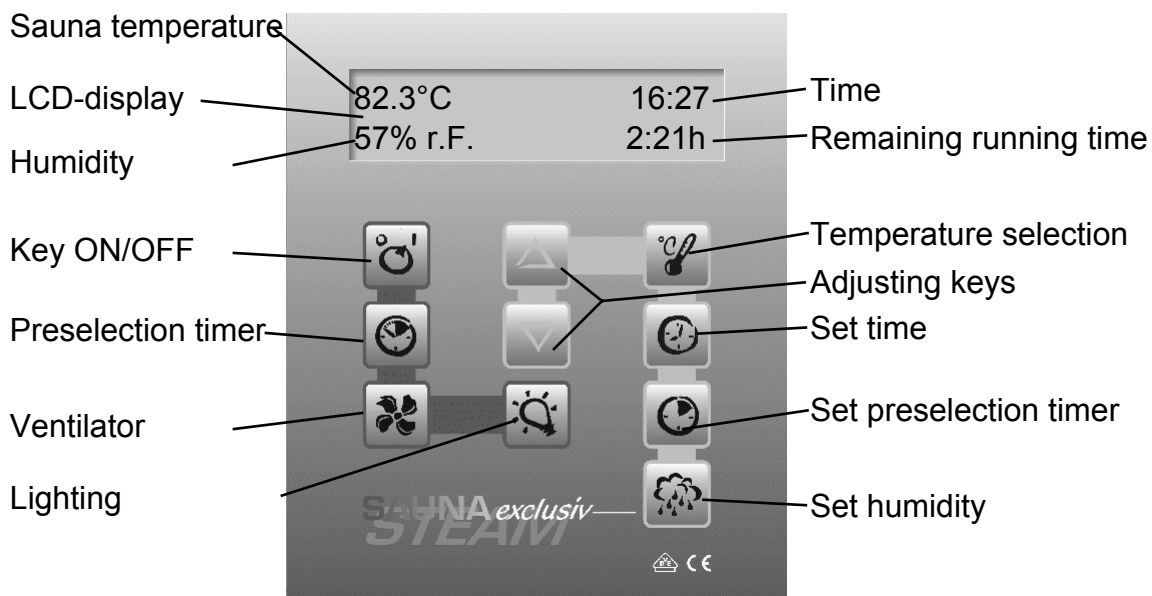
If a sauna stove with integrated evaporator is used instead of the osf steam generator, it must be connected to clamp U5. This clamp can be charged with a maximum of 2000W. If a stove with integrated evaporator is operated, the left DIP switch on the circuit board in the power element must be switched to the top position (ON). By doing so, clamp U1 is switched off in bio sauna operation. You may only use evaporators with built-in dry-running protection!



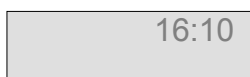
The connection of the power element with the control panel is effected by a four-core telephone line (osf item no. 310000500). The maximum cable length is 30m.

Cables within the sauna cabin must be heat-resistant.

### Operational controls in the control panel:



#### LCD display





If the control is switched off, the current time is displayed only.

16:10 Power failure	If the power supply has been interrupted, this is indicated in the display. This message disappears after pressing any key.
16:10 Start in: 22:35h	The preselection timer has been activated. The remaining time until the facility is switched on is displayed below the current time.
82,3°C A 16:45 Rem.time: 2:35h	The sauna control is operating. Time, temperature in the cabin, colour light operation and the remaining operating time are displayed.
42.8°C A 13:26 62%r.F. 3:57h	The bio sauna control is operating. Time, temperature and humidity in the cabin, colour light operation and the remaining operating time are displayed.
67.8°C 13:47 27% Drying	The drying program after termination of the bio sauna operation is running. Time, temperature and humidity in the cabin are displayed.
18:32 Temp.sensor def.	The temperature sensor in the sauna cabin is defect or the connection to the temperature sensor is interrupted or short-circuited. If the error has been cleared, this message can be deleted by pressing any key.
45.8°C 18:32 Hum.sensor def.	The humidity sensor in the sauna cabin is defect or the connection to the sensor is interrupted or short-circuited. If the error has been cleared, this message can be deleted by pressing any key.
144,8°C 12:55 Temp. safety	The temperature in the sauna cabin has exceeded 139°C. This could have triggered the temperature safety device in the sensor housing. After the temperature in the cabin has cooled, this message can be deleted by pressing any key.
98,3°C 21:03 Equip.overheat.	The temperature in the housing of the power element is too high. After the control has cooled, this message can be deleted by pressing any key.


## Key ON/OFF



With the key  the sauna can be manually switched on- and off. **Attention!** By this the control is not switched to zero potential! If the sauna is switched on, this key flashes. If the sauna is switched off after bio sauna operation, the drying program starts automatically at a cabin temperature of 70°. If required, this can be aborted by pressing the ventilating key .


## Activate preselection timer



With the key  the preselection timer can be activated after the switch time and the operating period have been programmed (see below). This preselection timer switches on the sauna at the programmed time. If the preselection timer is activated, this key flashes.

## Switch ventilator on




With the key  the ventilator in the sauna cabin can be switched on. If the ventilator is switched on, this key flashes.

This key also flashes if the drying program continues to run after the bio sauna operation has finished.


### Switch on cabin lighting




With the key  the lighting in the sauna cabin can be switched on. If the lighting is switched on, this key flashes.



### Select temperature

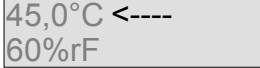


With the key  the temperature in the sauna cabin is selected:


1. Press  ⇒ the display indicates the currently selected sauna

temperature, e.g. 

2. Now the requested temperature within a range of 30°C to 110°C can be selected with the keys  and . With temperatures below 70°C (bio sauna operation) the requested humidity is also displayed, e.g.




If the selected humidity is higher than the value for the corresponding temperature, it is reduced automatically.


3. To save the requested temperature, press the key  again. If on setting the temperature no key is pressed for more than 10 seconds, the last selected temperature is automatically saved and the normal operation display appears again.



### Select humidity

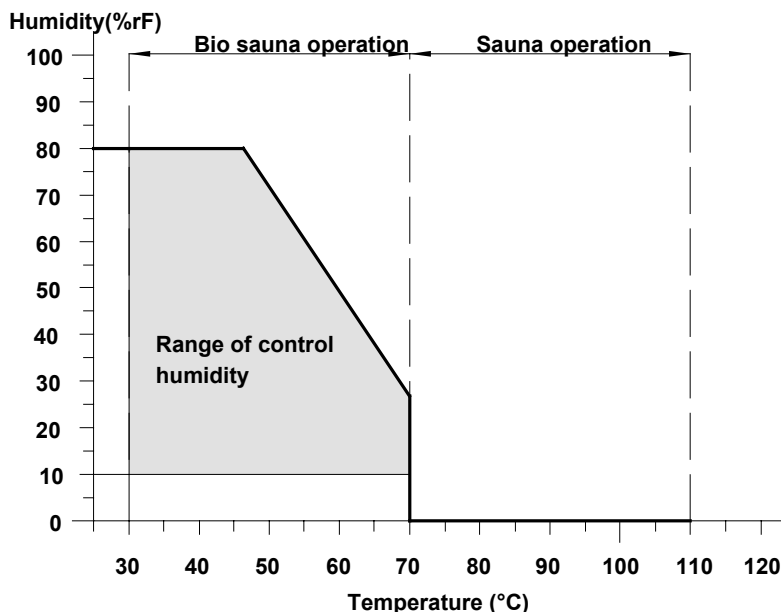



In case of nominal temperatures below 70°C, the humidity in the sauna cabin can be selected with the key  :

1. Press key  ⇒ the display indicated the currently selected humidity and

the nominal temperature, e.g. 

2. Now the requested humidity within a range of 10 to 80 per cent can be set with the keys  and . The maintaining of the temperature dependent maximum values is automatically ensured by the control.



3. To save the requested humidity, press the key  again. If on setting the humidity no key is pressed for more than 10 seconds, the last selected




humidity is automatically saved and the normal operation display appears again.


### Setting time



With the key  the current time is set:



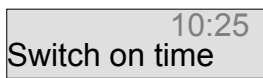
1. Press key  ⇒ the display indicates
2. Now the time can be set with the keys  and .




To save the time, press the key  again. If on setting the time no key is pressed for more than 10 seconds, the last displayed time is automatically saved and the normal operation display appears again.

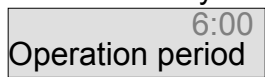
### Setting preselection timer







With the key  the built-in preselection timer is programmed:



1. Press key  ⇒ the display indicates
2. Now the requested switch on time can be set with the keys  and .



3. Press key  again ⇒ the display indicates
  4. Now the requested operation period can be set with the keys  and .
- The preselection timer can only be activated (see above) if an operation period has been programmed.

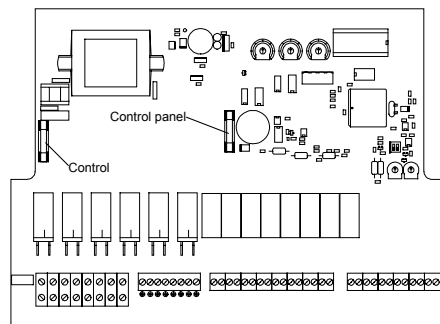
To save the switch times press the key  again. If on setting no key is pressed for more than 10 seconds, the last displayed switch time is automatically saved and the normal operation display appears again.

## Check list for possible malfunctions:

All system components have been inspected factory-provided for their function. If malfunctions occur even so, the following points should be checked, subject to a proper installation according to the connecting diagram, and provided that the connecting cables – insulation properly stripped - are tightly plugged into the connecting terminals.

- 1.) Is there supply voltage between the connecting terminals L1, L2, L3 and N?
- 2.) Has the temperature sensor system been installed according to the installation instructions?
- 3.) If the control panel does not operate:

Switch the control at the customer-provided main switch to zero potential and check the micro-fuses for the control electronics and the control panel. These are located inside the power element on the circuit board.



- 4.) If the heating does not operate:
  - 4.1. In case of overheating of the sauna cabin, the excess temperature safety

device, that is located in the sensor housing in the cabin, switches off the heating. The heating is not automatically switched on after the sauna cabin has cooled, the sensor system must be exchanged.

Check of the temperature safety device:

- Disconnect both leads of the red cable from the clamps 5 and 6 at the power element.
- Measure the temperature safety device with an ohmmeter or a circuit continuity tester.

A defect temperature safety device has no transmission.

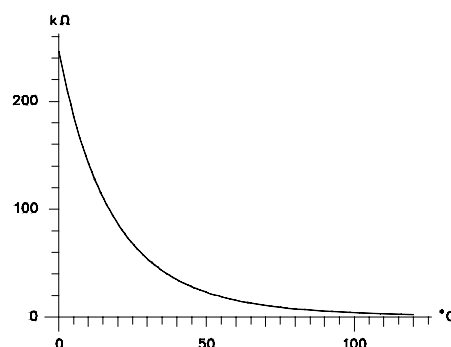
- 4.2. In case of a defect temperature sensor or interruption or short-circuit of the sensor cable, the heating is automatically switched off for safety reasons.

18:32  
Temp.sensor def.

Check of the temperature sensor:

- Disconnect both leads of the white cable from the clamps 7 and 8 at the control unit.
- Measure the temperature sensor with an ohmmeter.

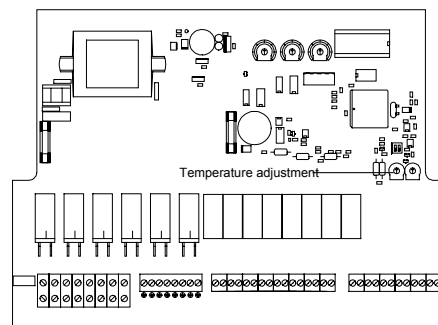
An intact temperature sensor has a resistance of approx. 68kOhm (see characteristic curve opposite) at a room temperature of 25°C.



- 5.) If the set temperature is not reached with working temperature control:

- 5.1. The temperature sensor system must be installed according to the installation instructions. If the sensor is located in warm airflow above the stove, the position of the sensor must be offset as long as the rising warm air does not cause a premature switching off of the heating.

- 5.2. If the temperature control early switches off the sauna stove with properly installed temperature control, you can remove this by adjusting the temperature range. For this a trimming potentiometer is located on the circuit board (see sketch).



- 6.) If the steam generation does not operate:

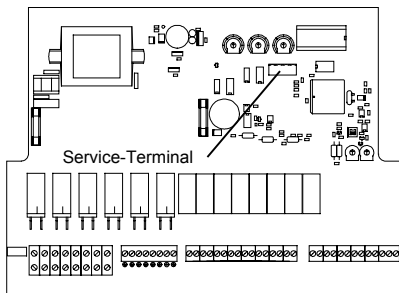
- 6.1. Switch on bio sauna operation with high humidity (80%) and low temperature (30°) and check connecting terminals U4 and U5 with an ohmmeter, if the clamps are supplied with 230V. U5 is only supplied with voltage if the actual humidity in the cabin is lower than the set nominal humidity. In case of temperatures above 70°C the steam generation is locked.

- 6.2. If voltage is supplied, the steam generator must be checked.

- 6.3. For safety reasons, the heating is automatically switched off in case of defect humidity sensor or interruption or short-circuit of the sensor cable. A defect humidity sensor must be exchanged.

45.8°C 18:32  
Hum.sensor def.

### Service terminal:



To optimally match the control to the various sauna facilities as well as to facilitate an initial operation and error detection, an osf service terminal (item no.3010000900) can be connected to this control. The connector plug for this is located on the circuit board inside the device. **Before opening the housing and before plugging in the service terminal, it is absolutely necessary to switch the control to zero potential!** After the control unit has been switched on, the first four lines of the diagnostic text in the display of the service terminal indicate, e.g.:

<b>Total oper.:</b>	<b>9256h</b>	total operation time of the control
<b>Sauna oper.:</b>	<b>200h</b>	operating hour counter sauna oper.
<b>Bio sauna.:</b>	<b>30h</b>	operating hour counter bio sauna
<b>Drying:</b>	<b>4h</b>	operating hour counter drying

Additional lines can be interrogated with the keys  $\Delta$  and  $\nabla$ . If required, the values in the **first** line can be changed after pressing the key  $\square$ .

**1. Total operating hours counter**

In this line the total number of operating hours of the control unit is displayed.

**2. Operating hours counter sauna**

In this line the operating hours of the facility in sauna operation (above 70°C) is displayed.

**3. Operating hours counter bio sauna operation**

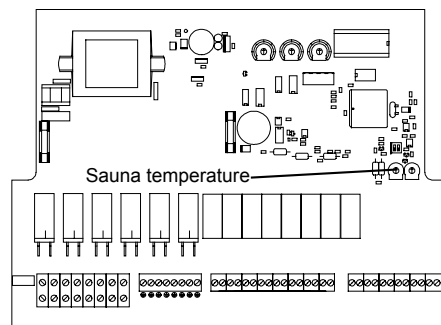
In this line the operating time of the facility in bio sauna operation (below 70°C, with humidity control) is displayed.

**4. Operating hours counter drying**

In this line the operating time of the facility in the drying program on completion of the bio sauna operation is displayed.

**5. Sauna temperature**

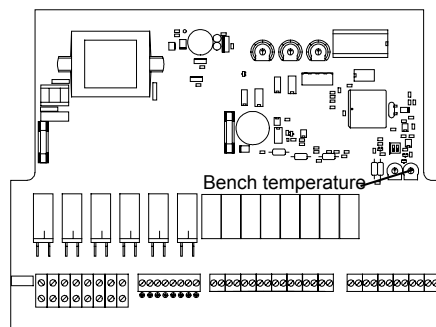
In this line the sauna temperature is displayed. If the display does not correspond with the actual temperature, it can be readjusted with the adjusting controller on the circuit board. A clockwise turning of the adjusting controller thus causes an increase of the displayed value. In case of a defect temperature sensor, "break of sensor" is indicated.





## 6. Bench temperature

In this line the temperature of the humidity sensor is displayed. If the display does not correspond with the actual temperature, it can be readjusted with the adjusting controller on the circuit board. Thus a clockwise turning of the adjusting controller causes an increase of the displayed value. In case of a defect sensor system, "-----" is displayed.



## 7. Humidity

This line indicates the current humidity in the cabin at temperatures below 70°C. With temperatures above 70°C or in case of a defect sensor system, "-----" is displayed.


## 8. Internal temperature

This line indicates the temperature in the power element of the control. In case of overheating of the power element, the heating is automatically switched off.




## 9. After-running time of the steam generator

This time indicates how long the steam generator stays in readiness for operation after the bio sauna operation has finished or been interrupted, before it is switched off and before the rinsing program is started.

This value can be adjusted to the requirements of each corresponding sauna facility if displayed in the **first** line of the service terminal:

1. After pressing the key  the sauna is switched off and the following message appears:

After runn.: 10 min  
After running time  
of the steam gener.


2. The after-running time can be changed with the keys  and . The lowest settable value is 5 minutes, the highest is 60 minutes.
3. If the key  is pressed again, the normal diagnostic display appears and the sauna facility continues to operate. The set value is automatically saved.

On delivery, the set after-running time is 10 minutes.



## 10. Minimum drying time after bio sauna operation


This line indicates the minimum time the sauna cabin is dried after the bio sauna operation at 70°C with activated ventilator has finished.

This value can be adjusted to the requirements of each corresponding sauna facility if it is displayed in the **first** line of the service terminal:

1. After pressing the key  the sauna is switched off and the following message appears:

Minimum dry.: 10  
Minimum dry. time  
of the cabin after  
bio sauna operation

2. The drying time can be changed with the keys  and . The lowest settable value is 0 minutes (no drying program), the highest is 30 minutes. The minimum drying time cannot be higher than the maximum drying time (see point 11).


3. If the key  is pressed again, the normal diagnostic display appears and the sauna facility continues to operated. The set value is automatically saved.

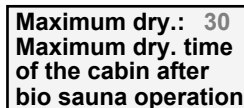
On delivery the set minimum drying time is 10 minutes.



### 11. Maximum drying time after bio sauna operation


This line indicates the maximum time the sauna cabin is dried after the bio sauna operation at 70°C with activated ventilator has finished.

This value can be adjusted to the requirements of each corresponding sauna facility if it is displayed in the **first** line of the service terminal:

1. After pressing the key  the sauna is switched off and the following message appears:



2. The drying time can be changed with the keys  and . The lowest settable value is 0 minute (no drying program), the highest is 60 minutes. The maximum drying time cannot be smaller than the minimum drying time (see point 10).


3. If the key  is pressed again, the normal diagnostic display appears and the sauna facility continues to operate. The set value is automatically saved.

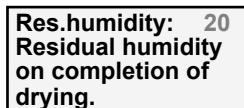
On delivery the set maximum drying time is 30 minutes.



### 12. Maximum humidity on completion of the drying program


This line indicates the degree of humidity when the drying program is stopped (after completion of the minimum drying time).

This value can be adjusted to the requirements of each corresponding sauna facility if it is displayed in the **first** line of the service terminal:

1. After pressing the key  the sauna is switched off and the following message appears:



2. The residual humidity can be changed with the keys  and . The lowest settable value is 10% r. H (relative humidity), the highest is 80%r.H.

3. If the key  is pressed again, the normal diagnostic display appears and the sauna facility continues to operate. The set value is automatically saved.

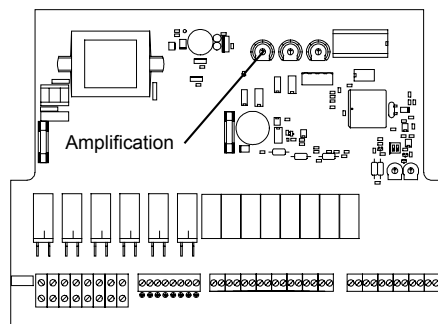
On delivery the set residual humidity is 20%r.H.

### 13. Transitional period of the colour light automatic

Irrelevant for controls without colour light automatic.

### 14. Amplification of the PID controller

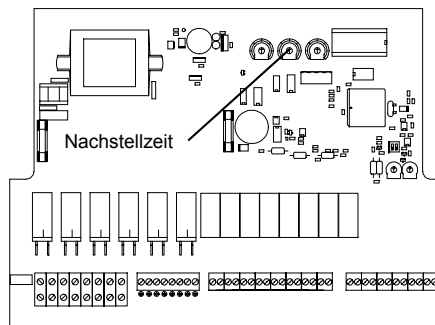
This line indicates the relative amplification factor of the PIK temperature controller. For an optimum adjustment to the corresponding facility, it can be readjusted with an adjusting controller on the circuit board. Thus a clockwise turning of the adjusting controller causes an increase of the displayed value. For an optimum setting of the PID controller, sound knowledge in the field of measurement and control technology is necessary. The factory-provided basic setting (central position) should only



be changed by correspondingly trained specialists.

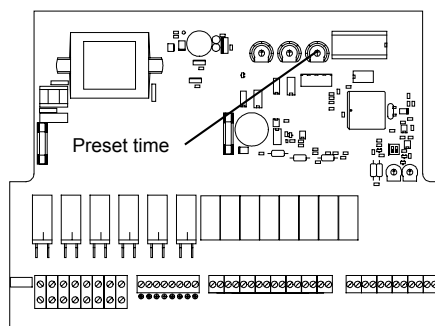
**15. Reset time of the PID controller**

This line indicates the reset time of the PID temperature controller. For an optimum adjustment to each corresponding facility, it can be readjusted with an adjusting controller on the circuit board. Thus a clockwise turning of the adjusting controller causes an increase of the displayed value. For an optimum setting of the PID controller, sound knowledge in the field of measurement and control technology is necessary. The factory-provided basic setting of approx. 10-12 minutes (central position) should only be changed by correspondingly trained specialists.



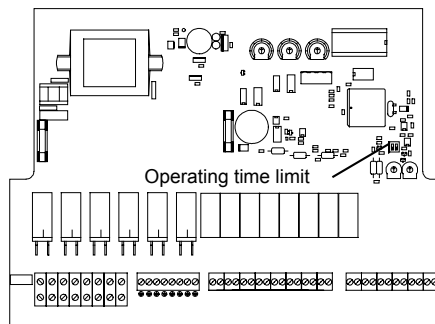
**16. Preset time of the PID controller**

This line indicates the preset time of the PID temperature controller. For an optimum adjustment to each corresponding facility, it can be readjusted with an adjusting controller on the circuit board. Thus a clockwise turning of the adjusting controller causes an increase of the displayed value. For an optimum setting of the PID controller, sound knowledge in the field of measurement and control technology is necessary. The factory-provided basic setting of approx. 1.5 minutes (central position) should only be changes by correspondingly trained specialists.



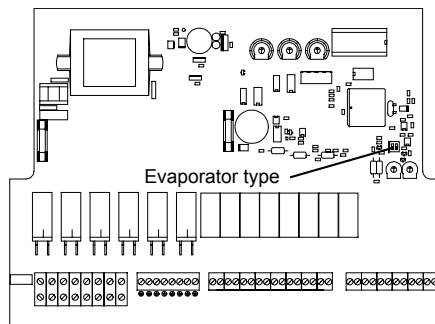
**17. Maximum operating period (operating time limit)**

This line indicates the maximum operating time of the sauna heating. Factory-provided it is limited to a maximum of six hours as stipulated for privately used facilities. By disconnecting a link on the circuit board next to the DIP switch, the operating time limit can be extended to 12 hours. **This operating time is only allowed in publicly run and inspected facilities.**



**18. Selection of the evaporator type**

This line indicates if in bio sauna operation a net phase of the sauna stove is locked to allow for a connection of a stove with integrated evaporator instead of an osf silver steam. This is set with the left DIP switch on the circuit board. In the top switch position, the display indicates “external evaporator“. In this switch position it is possible to connect a sauna stove with an integrated evaporator, whereas clamp U1 in the bio sauna operation is switched off. In the lower switch position (factory-provided setting) the display indicates “osf steam generator”.



In this switch position you can connect an osf steam generator type Silver-Steam-spezial or System-3000.

**19. Maximum sauna temperature**

This line indicates the maximum temperature that has been measured at the temperature sensor during the operating time of the control.

**20. Maximum bench temperature**

This line indicates the maximum temperature that has been measured at the humidity sensor during the operating time of the control.

**21. Maximum humidity**

This line indicates the maximum humidity that has been measured at the humidity sensor during the operating time of the control.

**22. Maximum internal temperature**

This line indicates the maximum temperature that has been measured in the power element during the operating time of the control.

**23. Operating hours counter excess temperature**

This line indicates if and how long the control has been overheated by overload or too high ambient temperatures.

**24. Current heating output**

This line indicates the current, relative heating output. This display can be useful for an optimization of the PID controller.

***We wish you a lot of fun and relaxation in your sauna.***