Naturela Smart Home system

User Interface for working with controller for combined water heaters
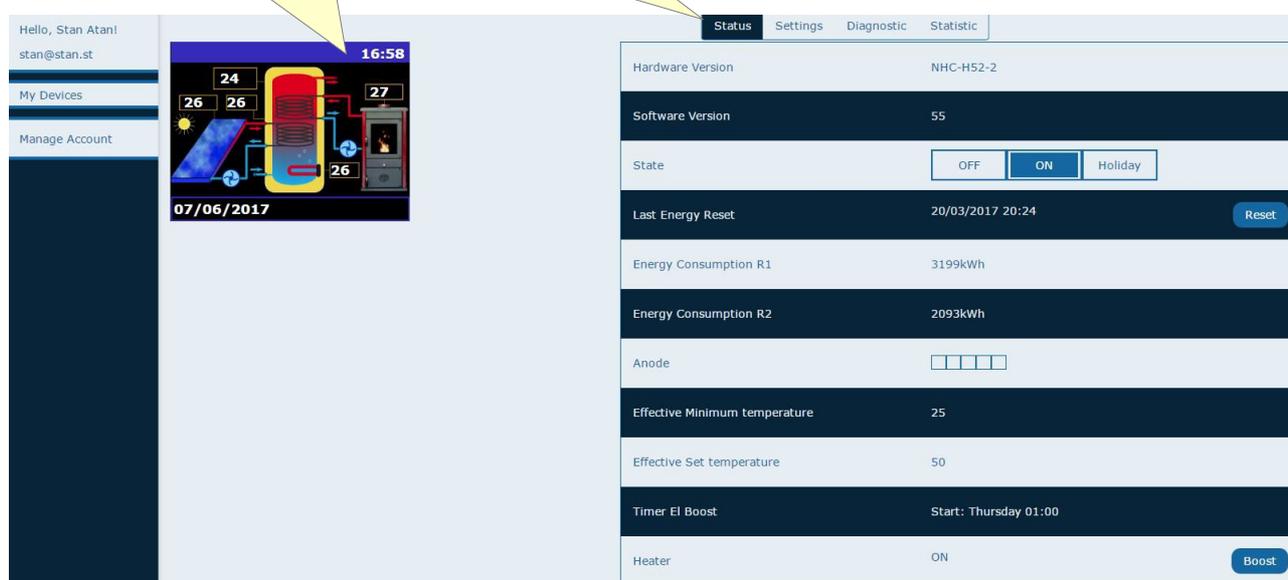
NHC-H52-xx and NHC-H54-x

User Manual

If you wish to learn how to operate with the Naturela Smart Home system, take a look at the file **Nat_Smarthome_EN.pdf**.

The user interface of the system provides the same information as the one from the screen equipped to the controllers. On the screen you can see the current time zone where the appliance is located and all of its measured temperatures. The information is divided into four pages: "**Status**," "**Settings**," "**Diagnostic**," and "**Statistic**." Using the mouse on your computer, you can browse through the pages.

The "**Status**" page shows information about: software and hardware version, work state of the thermoregulator, Energy Consumption (kWh) for two energy consumption tariffs (R1, R2), the anode protection status, the set temperatures for turning the heater on/off, heater and pumps status, El. boost timers, and state of the special modes (anti-legionella or antifrost). This page also shows information about currently active registered errors form the self-diagnostics system.

The buttons on this page allow the user to turn on or off the controller, to reset the readings about used electricity, and to manually turn on the electrical heater (if the current temperature settings do not require it).

From the "Settings" page, the user can look and edit all working parameters. All four timers can be adjusted for additional water heating, by activating the electrical heater, or by changing the conditions for activating the circulation pumps and the electric heater. The user can adjust the beginning time for the energy consumption tariffs, the configuration for the boiler installations, and the conditions for activating the safety features for the boiler and the solar collector.

Field **Timers for additional el. heating**

If at some point you want to be sure that there is enough hot water, despite the fact if there was enough sunlight during the day or if the boiler has been working, then you can activate the electrical heater to make sure the water is heated to the desired temperature and amount. This is why the controller is conveniently equipped with four timers, which you can individually program to turn on. They will activate the electrical heater, which will then heat up the water if it is colder than it should be. Each timer can be adjusted for when to start and when to end the process, and which days of the week it should work.

| Status | Settings | Diagnostic | Statistic |

H52-2

Timers

Enabled	Begin (HH:MM)	End (HH:MM)	Temperature (°C)
☑ Days of Week	12:00 PM	03:00 PM	70
☐ Days of Week	01:00 PM	11:59 PM	65
☐ Days of Week	01:00 AM	02:00 PM	60
☑ Days of Week	01:00 AM	03:00 AM	60

Setting the parameters for the timers is not enough to make them active, you will also have to mark the corresponding checkbox. Clicking on the button "**Days of the week**" will open a drop down menu in which you can schedule the days for which the timer is supposed to work. An example is shown below:
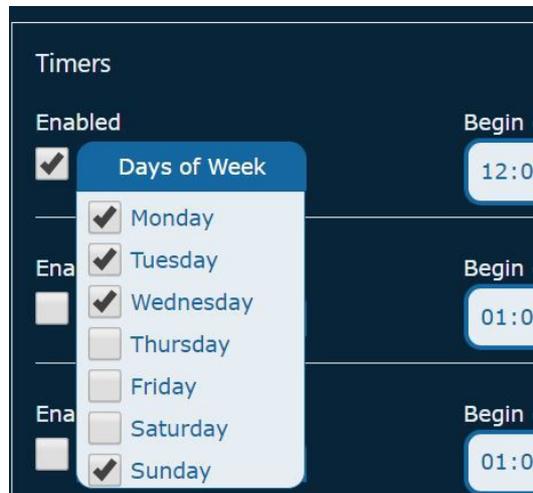
When programming the timers, the "Begin" hours need to be before the "End" hours. The reverse combination is impossible, this is why we recommend that you set the "End" time first.

Field "**El. Heating**" –
- "**El. Set Temperature**" shows the temperature measured by the t1 sensor. After the el. heater warms up the water in the boiler to the set temperature, it will shut down.
- "**Minimum Temperature**" is the lowest temperature required for the heater to not turn on.
- "**Sensor**" gives you the option to select which sensor will measure the temperature. The two options are: **Middle t5** and **Bottom t1**.

When the temperature of the water is lower than the "**El. Set Temperature**" and higher than the minimum temperature required to activate the el. heater, the heater will loop back to its last action, meaning that if it was turned off, it will remain off. This rule will be disregarded only if the "**El. Set Temperature**" is changed: in this case, the el. heater will turn on and heat the water to the newly set temperature.

Field "**Pumps Control**" is used to adjust the temperature settings for activation and deactivation of the pumps located in the solar collector and the boiler.

The perimeters of the field are the following:
- "**Solar dt1**" - The temperature difference between the solar collector and the specific thermo-sensor inside the boiler (used for activating and deactivating the pump).
- "**DHW Priority dT2**" - Temperature difference between the boiler and the specific thermo-sensor inside the boiler (used for activating and deactivating the boiler pump), while working in DHW "**Boiler Pump Priority**"

- **"CH Priority T4"** - Adjusting the temperature for turning on/off the boiler's circulation pump, while working in CH **"Boiler Pump Priority."** While working in this mode, when the measured temperature of the boiler thermo-sensor (t4) becomes higher or equal to the temperature in the "ON" field, the boiler pump will be activated. When the temperature becomes lower than the one in the "OFF" field, the pump will shut down.
- **"Boiler Pump Priority"** - Letting you choose which mode the boiler installation is going to work in.
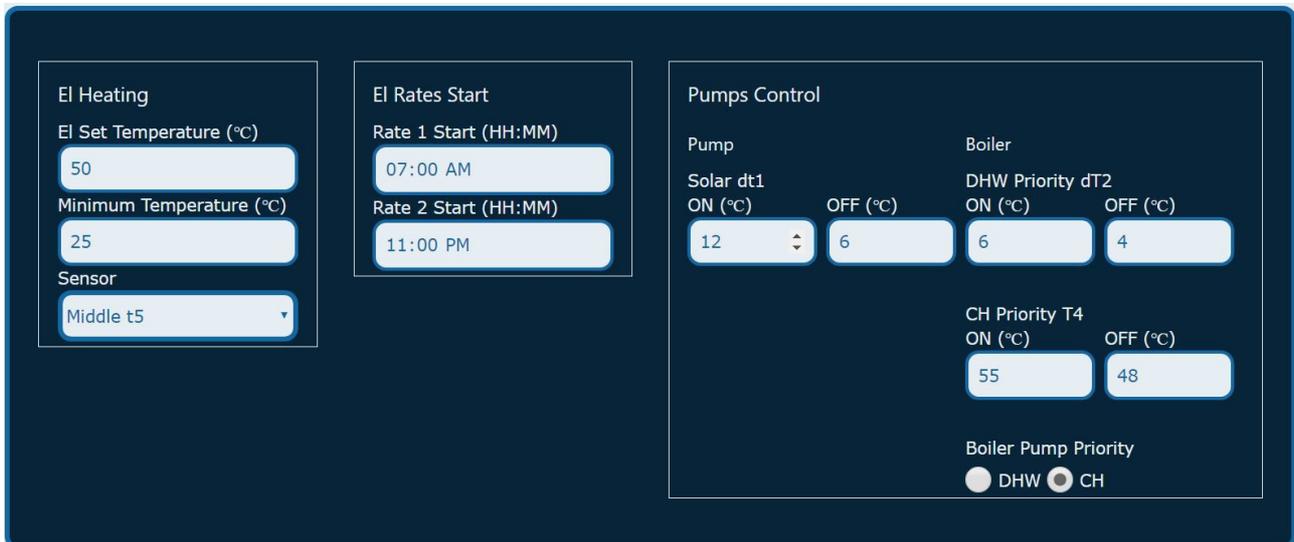

Field "**El. Rates Start**" lets the user set the start time for the two electricity rates, which will be used to track the energy used. In Bulgaria, there are "day" and "night" rates.

Field "**Heating Installation**" lets the user configure the boiler by activating or deactivating the different heat sources, the anode and the anti-legionella protections.

„Solar Protection"
- Solar anti-frost – This feature gives the user the option to set a temperature, under which the anti-frost protection will get turned on and the solar collector will not get damaged.
- Auto Holiday Mode – This feature when turned on, will distribute the heat away from the boiler during the night. By doing this, the solar installation is protected from overheating when the sun is strong during the next day.
- Use Boiler Pump – When this mode is activated, the heat in the boiler is getting redistributed away from the boiler using both the circulation pumps of the solar installation, and its own.
- Tank Minimum Temperature – The minimum water temperature required in the boiler, to make sure that the solar panel will not overheat from working over the course of the next day.
- Solar Overheating – The maximum allowed temperature of the solar collector. A sound signal will be played if the temperature goes above the dangerous level.
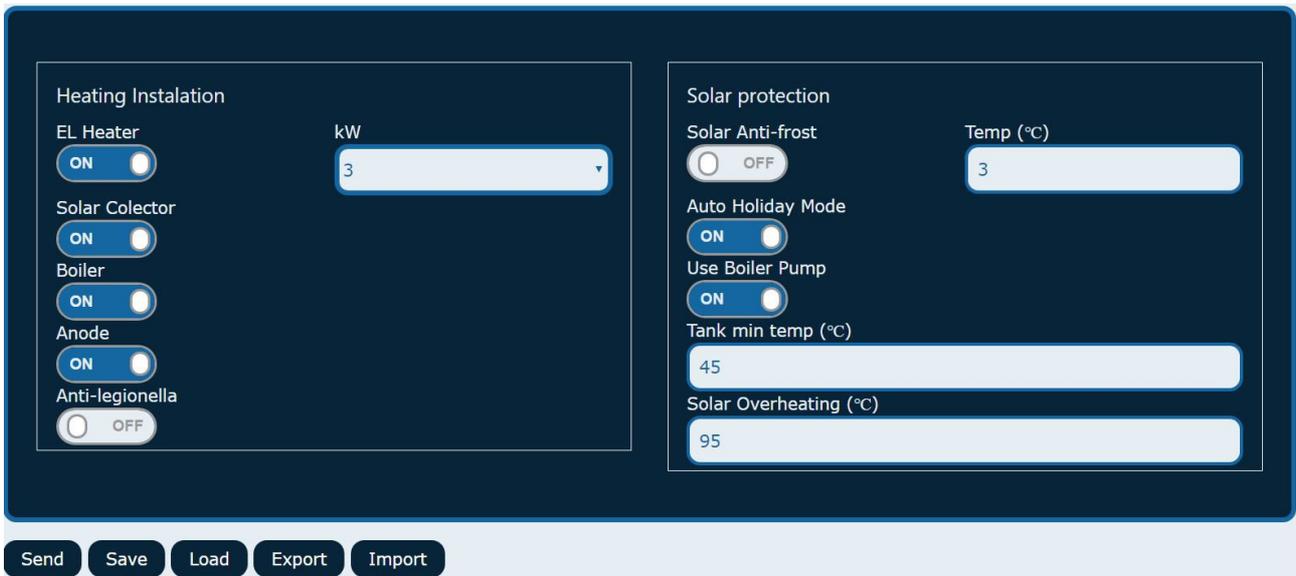
After making the desired changes inside the menu, you will have to press the button "Save!" Wait for a confirmation from the controller before exiting. The picture below shows what the confirmation window would look like:
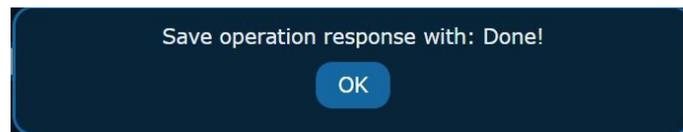
Thanks to the "**Send**" button located at the bottom of the page, the current controller configuration will be saved onto the system's server. This way, if in the future you make a mistake for one of the parameters, you could restore your old working configuration. This can happen by pressing the "**Load**" button, which will upload the saved settings from the server. Finally, by pressing "**Send**" you will give them to the controller.
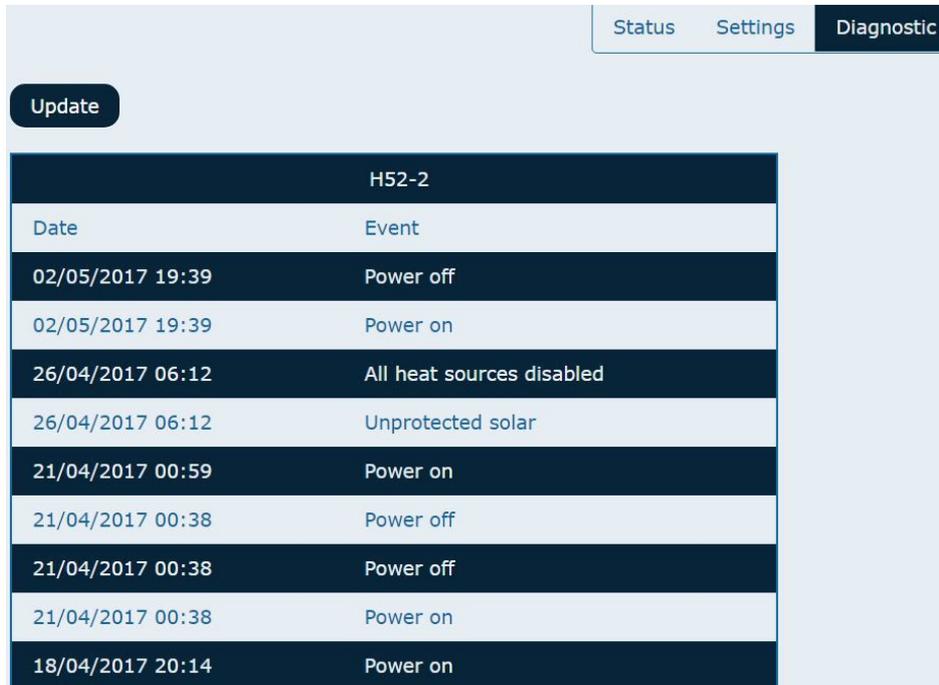
If you wish to store the parameters of the controller settings on a file on your computer, you can use the "**Export**" button to save them and the "**Import**" button to load existing files for future use. This option will be very useful in case you wish to use already tested and working parameters for other similar devices.

While changing the settings, if one of the parameters exceeds its allowed value, the field around it will be marked in red.
*After hitting "**Send**," if one of the parameters has a value which the controller cannot accept, the whole field will be marked in red.*

The page "**Diagnostic**" shows information about registered from the controller malfunctions and peculiar events. They are recorded with an exact time and date of their occurrence.

*The data is not refreshed automatically from the controller. For this reason, when opening this page, first you need to click on the "**Update**" button!*


The page "**Statistic**" contains graphs about previous days and recorded data about the following parameters:
- Consumption of energy (kWh)
- Work done by the solar pump and/or the boiler pump (minutes)
- Average water temperature at the top half of the boiler (°C)

In order to look at the graphs, first you need to choose the desired date or dates. This can be done from the menu on the page, which is shown in the picture below:
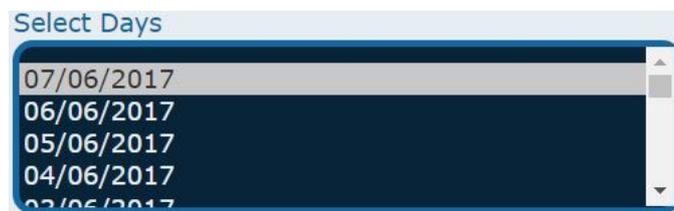
If you press and hold Ctrl, you will be able to make multiple day selections with the mouse.

The graphs have different colors so it will be easier to distinguish them. The vertical axis is composed of the recorded variables and the horizontal axis is used for the specific hours of the day.