

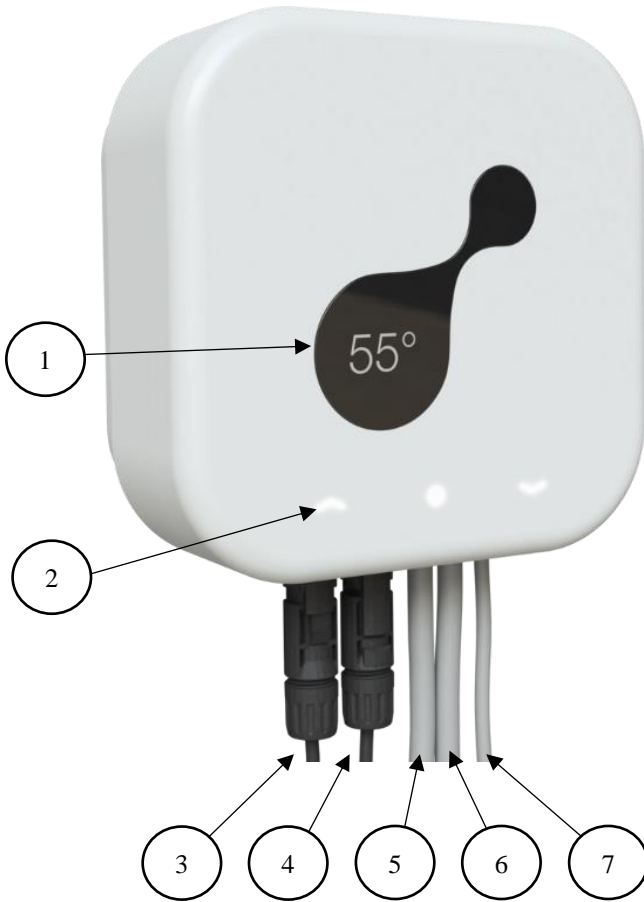


USER MANUAL

CONTENT

CONTROL ELEMENTS AND CONNECTIONS.....	3
HOW IT WORKS.....	4
INSTALLATION PROCEDURE, SWITCHING ON THE DEVICE.....	5
CONNECTION DIAGRAM	6
USER MENU	7
SPECIFICATIONS	11
EU Declaration of Conformity	12

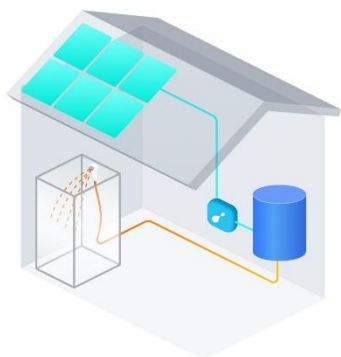
CONTROL ELEMENTS AND CONNECTIONS



Position	Control elements & connections
1	OLED text display
2	Touch sensitive control buttons
3	Photovoltaic modules connection (POSITIVE)
4	Photovoltaic modules connection (NEGATIVE)
5	Device connection cable to the water heating element
6	Device connection cable to the main power grid
7	Device connection cable to the temperature sensor

HOW IT WORKS

Our heating system is as simple as possible. Install solar panels, connect them to the NectarSun controller and water heater you already have (for further instructions please see further pages).



Energy produced by solar panels is stored in your heater to keep it when you need it, day or night.

Controller is able to connect to most electric water heaters available for household use. The device connects directly to the water heater, without changing the existing electrical wiring.

No pipes, valves, pumps or other additional equipment.

Location for Solar Panels Depending on the demand for hot water from 4 to 12 solar modules can be installed, maximum 2500 Wp. The arrangement of the modules can be decided individually. They can optionally be mounted on a pitched roof, flat roof, or can be free-standing. An appropriate mounting angle can range from 20° up to about 50°. Special reinforcements are available for extreme conditions such as high wind areas and snow loads. Avoid any shadow areas especially between southeast and southwest. Even partial shading will lead to a significant performance reduction.

Note, please check any national regulations for specific countries.

Durability and Security stands out due to exceptional Nectar Sun functionality:

- The MPPT system inside the controller is always balancing the highest solar power, depending on the solar radiation available.
- Controller and water storage tank are working with DC, so that there are no conversion losses.
- Nectar Sun has a boost mode to avoid legionella.
- It is advisable to install a thermostatic water mixer. It regulates the water temperature by mixing in cold water to reach the desired temperature. For this, the combi valve MT GDS should be used.
- Protection against overheating due to overload separation of the solar modules.
- Protection against overvoltage with surge protection in the PV input.
- Protection against risk of frost – away mode and PV modules are frost resistant.
- High reliability: solar savings (kWh) can be read on the display or Nectar Sun app.
- High electrical safety due to positive separation of the PV-side and conformance testing of standard under the CE certification procedures.

INSTALLATION PROCEDURE, SWITCHING ON THE DEVICE



**CAUTION! HIGH VOLTAGE.
CONNECTION WORKS SHOULD ONLY BE CARRIED OUT BY
QUALIFIED SPECIALISTS.**

1. Recommended maximum total power of PV modules in the maximum power point 1.5kW should not exceed 2.5 kW.
2. PV modules are connected serially. Maximum current of PV modules in the maximum power point should not exceed 10 A.
3. When installing connections of PV modules, assure that connection polarity is not reversed.
4. When configuring the photovoltaic system, make sure that all photovoltaic system components are operating completely within their permitted operating range. All measures recommended by the solar module manufacturer for maintaining solar module properties must be followed.



CAUTION! If connection polarity is reversed, damage to the device is unavoidable.

5. Nectar Sun installation and wiring works may be only performed when the device is completely OFF, that is, all the switches are set to 0 position.



CAUTION! It is forbidden to disassemble, install or perform other connection works when Nectar Sun device is not completely OFF.

6. Compatibility with hot water tanks please see „Specifications. Recommended heating element“. Recommended to have overpressure valve.
7. Nectar Sun device must be installed as close to the boiler as possible. The installation place must not hinder natural ventilation of the device and be convenient to control it. For precise readings we recommend to install temperature sensor on the top of the tank.
8. Nectar Sun is suitable for indoor installation only.
9. The device must not be installed or operated above an altitude of 11,154 ft. (3400 m). The maximum permissible DC voltage of the inverter depends on the altitude.
10. Disconnect the boiler from electricity grid and connect it to Nectar Sun.
11. Connect connectors of solar PV modules to the Nectar Sun (see Fig. “Control Elements and Connections”)
12. Connect Nectar Sun device to electricity grid.
13. The manufacturer is not responsible for any damage resulting from improper use. All warranty claims are considered void in such cases. Proper use also means - carefully reading and obeying all the instructions and safety and danger notices in the operating instructions - carrying out all the specified inspection and servicing work - installation as per operating instructions.
14. Modifications of the device are not allowed. Nectar Sun device can be connected only to water tank (boiler).

CONNECTION DIAGRAM



CAUTION! It is forbidden to disassemble, install or perform other connection works when NectarSun device is not completely OFF.



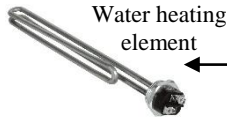
CAUTION! If connection polarity is reversed, damage to the device is unavoidable.



PV modules



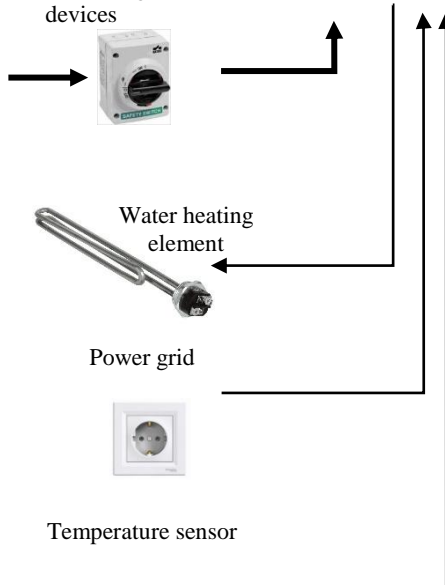
System protection by Switch, relays overvoltage and other devices



Power grid



Temperature sensor



USER MENU

When starting up your Nectar Sun for the first time, various setup settings must be selected.

To switch on the device you need to

To set up your Nectar Sun you need to do the following:

To set up a time.

Note: after this step your Nectar Sun is starting to work. If you want to set up an additional information proceed with following:

To control and set up please choose :

if you want to connect the device with internet via wifi and control it with Nectar Sun app. For further instructions please see: "How to connect wifi and control via app";

if you want to control the device manually. For further instructions please see: "How to control manually".




Note: 30 min. after switching on the device your Nectar Sun is ready to be connected to wifi.

If you want to pair the device with wifi later, please go to the section „Settings. Pair with wifi“.

If setup is stopped before it is completed, it can be started again via reset.

HOW TO CONNET WIFI AND CONTROL VIA APP (CONFIGURED MENU)

Note:

-  To navigate and go to next screen.
-  To navigate and go to previous screen.
-  To select or confirm press.

Main screens in various operation modes

Display:			Explication
Idle			Main display with current water temperature
Active status		Connected to wifi or not connected	water temperature Connected to network of not connected
		Grid/Sun/Idle	Grid - shows power from grid, if uses; Sun - displays power from pv, if uses; Idle – shows nothing.
Active totals		Today XX kWh Total XXX kWh	Today – energy (from PV) count during the day (kWh.) TOTAL – total energy count (from PV) from start-up (kWh, MWh).
Settings		Settings	Select to open settings menu
	Language	Language	Set display language
	Back	Back	Go back to main screen
	Reset	Reset	Reset all settings: <ul style="list-style-type: none"> • day/night time; • day/night temperature; • time; • language; • mode; • wifi configured, if it was connected. To start your Nectar Sun you need to set a time. 30 min. after Reset you can pair the device with wifi.

To set up other operations please see Nectar Sun App.

For Android: www.nectarsun.com/android

For iPhone: www.nectarsun.com/iphone

CONTROL MANUALLY (NOT CONFIGURED MENU)

Note:



To navigate and go to next screen.



To navigate and go to previous screen.



To select or confirm press.

Main screen in various operation modes:

Display:	Menu item	Text	Explication
Idle			Main display with current water temperature
Active status		Auto/Away/No grid/Boost	Shows heating mode status.
		Grid/Sun/Idle	Grid - shows power from grid, if uses; Sun - displays power from pv, if uses; Idle – shows nothing.
Active totals		Today XX kWh Total XXX kWh	Today - energy count during the day. TOTAL – total energy count from start-up. In kWh, MWh.
Mode			Press to choose the mode
	Auto		Auto mode keeps water temperature according to day/night temperature settings (pls. See settings). Uses grid power, if PV power is not enough or not available.
	Away		Away mode keeps water temperature between 10-45°C
	No grid		No grid mode uses only PV for water heating. When this mode is selected, the maximum temperature could reach 75 °C. Connects to grid, if water temperature is < 5°C.
	Boost		Boosts up water temperature to 66°C. Connects to grid.
Settings		Settings	Select to open settings menu
	Day temp.	Day temp.	Select the minimum temperature you want to heat water in day time. Heating from grid is turned on below this temperature.
	Night temp.	Night temp.	Select the minimum temperature you want to heat water at night time. Heating from grid is turned on below this temperature.
	Max temp.	Max temp.	We recommend Set maximum water temperature, then heating from sun panels.

			While heating from PV, water heating is turned off then temperature is reached.
	Day starts	Day starts	Set the start of your day, e.g.: 7:30 a.m.
	Night starts	Night starts	Set the end of your day, e.g.: 10:30 p.m.
	Time	Time	Set current time
	Language	Language	Set display language
	Pair with wifi	Pair with wifi	Connect to wifi
	Back	Back	Go back to main screen
	Reset	Reset	<p>Reset all settings:</p> <ul style="list-style-type: none"> • day/night time • day/night temperature • time • language • mode <p>To start your Nectar Sun you need to set a time. 30 min. after Reset you can pair the device with wifi.</p>

SPECIFICATIONS

ELECTRICAL PARAMETERS

Voltage range	90 - 264VAC / 47 - 63Hz
Max, output current	16A
Overvoltage protection	yes
Overcurrent protection	yes

INPUT (DC)

Recommended max PV power	1500 – 2500 Wp
Max. input voltage (Voc PV)	350 V
Max. current (Isc PV)	10A
No of MPP trackers	1
MTTP range	100 - 260
V	
Load (heater)	16 - 53 Ω

OUTPUT

RECOMMENDED HEATING ELEMENT:

1 kW, 4x250W photovoltaic panels	3-3,5 kW heat element
1,5kW, 6x250W photovoltaic panels	2-2,5 kW heat element
Max. efficiency	≥ 99 %

GENERAL DATA

Cooling	natural convection
Operating temperature range	+10° C .. +30°C
Max. store humidity	75% non condensing
DC connection	MC4
Temperature sensor	digital
WLAN	IEEE 802.11b/g/n client
Degree of protection	IP20
Max. heating temperature	90°C
Dimensions (wxhxd) mm	150x150x83
Weight, kg.	1
Certification	CE, TUV
EMC device class	B
Warranty	5 year

EU Declaration of Conformity

Vendor's name: LTD Saulės Graža Saulėtekio al. 15, LT-10224, Vilnius, Lithuania
Product description: Photovoltaic heat controller
Type designation: PVHC-2.01

This is to confirm that the unit stated above is compliant with the protection requirements set forth in Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility (Electromagnetic Compatibility Directive) and Directive 2006/95/EC (Low Voltage Directive).

The unit is compliant with the following standards:

2006/95/EC

“Directive relating to electrical equipment designed for use within specific voltage limits”

2004/108/EC

“Directive relating to electromagnetic compatibility”

Safety of the unit:

IEC 60950-1:2005, mod.

IEC 60950-1:2005/A1:2009, mod.

Electromagnetic disturbances:

EN 55011:2009

EN 55011:2009/A1:2010

EN 61000-3-2:2014*

Electromagnetic immunity:

EN 61000-6-1:007

EN 61000-4-2:2009

The unit mentioned above is therefore labelled with the CE mark.

Any unauthorized modifications to the supplied unit and/or any use of the unit that is contrary to its intended purpose shall render this Declaration of Conformity null and void.

Warranty

Every new Nectar Sun is protected with comprehensive warranty. Standard warranty for the device is 2 years from the date of purchase. To extend it you can fill in an additional information in www.nectarsun.com/warranty.

This warranty does not effect or replace the consumer's legal rights under applicable laws. Unless contrary to the respective local law, the warranty in respect of a repaired or replaced product/part shall extend to the remaining warranty period of the repaired product or replacement thereof to the consumer.

Upon request the consumer may be required to provide the purchase receipt or other documentation or information in respect of the date and place of purchase. If the event that the information is not presented or if it is incomplete or illegible, Nectar Sun reserves the right to refuse the warranty service.

This warranty does not cover damage resulting from:

- ✓ Normal wear and tear of the equipment;
- ✓ Defects and damages due to the equipment being used other than in a normal and customary manner.
- ✓ Any unauthorised disassembly, repair, alteration or modifications being carried out.
- ✓ Misuse, abuse, negligence or accident howsoever caused.
- ✓ Defects and damage arising from improper testing, operation, maintenance, installation, or any alteration or modification.
- ✓ Defects or damage due to spillage of food or liquids, corrosion, rust or the use of wrong voltage.
- ✓ Scratches or damage to plastic surface and all other externally exposed parts that are due to normal customer use.
- ✓

This warranty will be void in any of the following events:

- ✓ If the serial number or warranty seal on the equipment has been defaced or removed;
- ✓ If any term contained in consumer guide has been altered or modified in any way without the prior written consent of Nectar Sun.
- ✓ Without any proof of purchase.

TROUBLE SHOOTING GUIDE

We recommend to call a specified professional or electrician to repair the device.

Cause(s)	Solution(s)
Device doesn't turn on when plugged in 230V socket	Check if the socket has voltage. If it proved to be true, disconnect device from AC socket, remove cover and check main power grid fuse that is shown in the internal connections diagram (page 5).
	Check main power grid wires connection is connected properly.
Device turns on, but sun mode doesn't work	Disconnect device from AC socket, unplug PV wires, remove cover and check PV fuse, that is show in the internal connections diagram (page 5).
	Also check if heater wires are connected properly in the device. They are marked as water heating element in internal connections diagram (page 5).