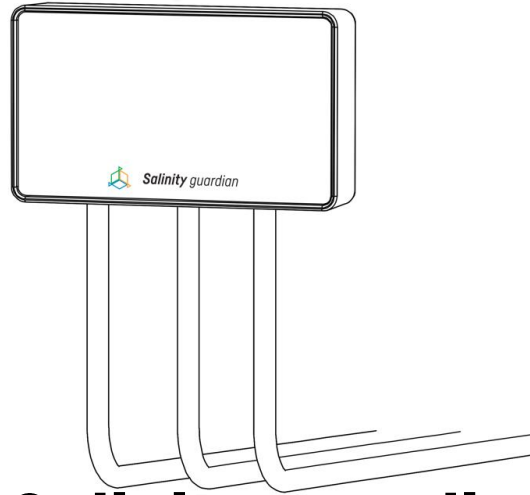




**User manual**

**ver. 1.3.1**



**Salinity guardian**

Dear customer, **thank you** for your purchase.



**ENGLISH**

***[www.reeffactory.com](http://www.reeffactory.com)***



## Table of contents

---

I. Initial configuration.....	3
II. Operation mode configuration .....	6
III. Device calibration .....	14
IV. Device configuration.....	17
V. Resetting the device .....	18
VI. Smart Reef system.....	19
VII. Technical problems and their possible causes .....	20
VIII. Dedicated power adapter - user guide.....	22



**ATTENTION:** Salinity guardian is not waterproof. Avoid submerging the display in water. Submerging the device's display in water may cause permanent damage to the device. Salinity guardian is equipped with additional temperature sensor that compensates the salinity readout.



**ATTENTION:** Read the manual carefully before use. There might be slight differences between this manual and what is presented on the screen. This manual contains information about the device functions that operate with the latest firmware. Information about the firmware version installed on the device is always displayed in the lower right corner above the serial number. If the device version is older, please update the device firmware to get access to the latest features. Included with the device are: dedicated power adaptor, sensor holder, probe, temperature sensor magnet for resetting the device and quick start guide.



**ATTENTION: RECOMMENDATION FOR SALINITY PROBE**

Before first use of the device or after long break in use it is necessary to submerge the salinity probe and temperature sensor in aquarium water (saltwater) for at least 24 hours and then proceed with calibration. The probe stabilization period may take up to 7 days. Measurements may be less stable during this time.

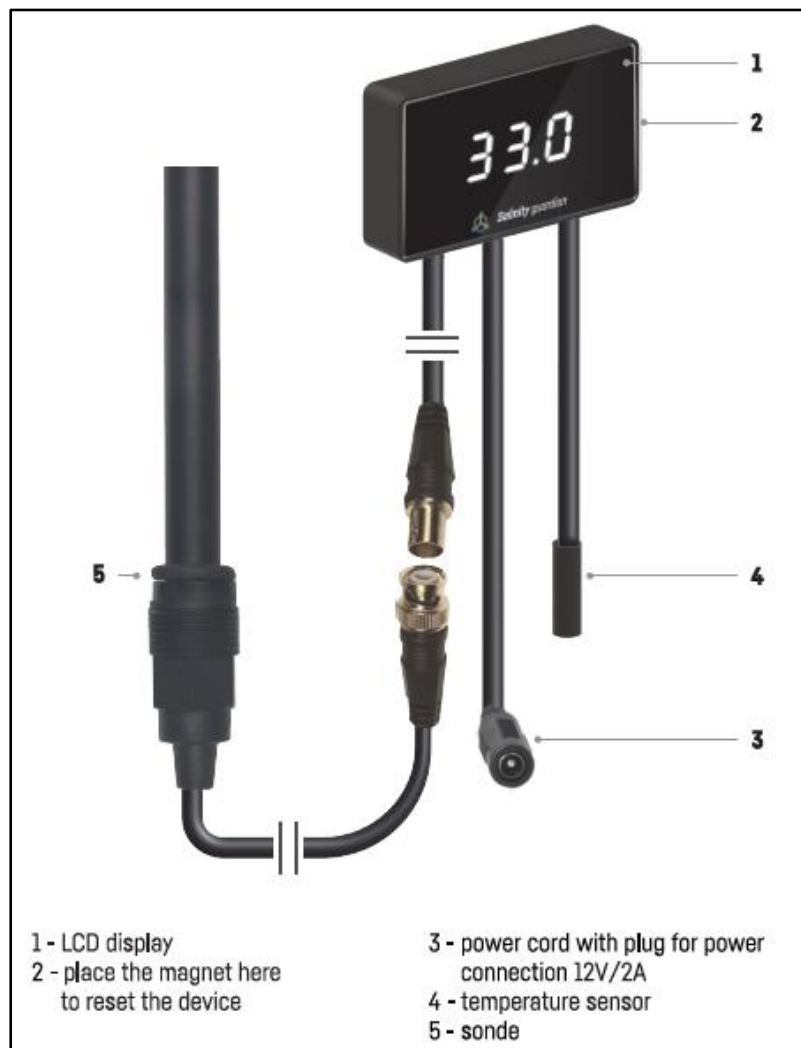


Do you need help? Send us an email [support@reeffactory.com](mailto:support@reeffactory.com)

# I. Initial configuration

To configure the device properly, please follow the instructions below..

1. Install the probe in the tank in a way that allows for accurate salinity measurement. The probe has to be installed in the area where the water is flowing. The temperature sensor has to be placed near the salinity probe. The salinity probe can't be installed in close proximity to the heating element, RO water inlet or other liquid inlets. The best place for the installation of the Salinity guardian is aquarium's sump near the inlet of aquarium water.
2. To properly install the device familiarize yourself with the graphic below.

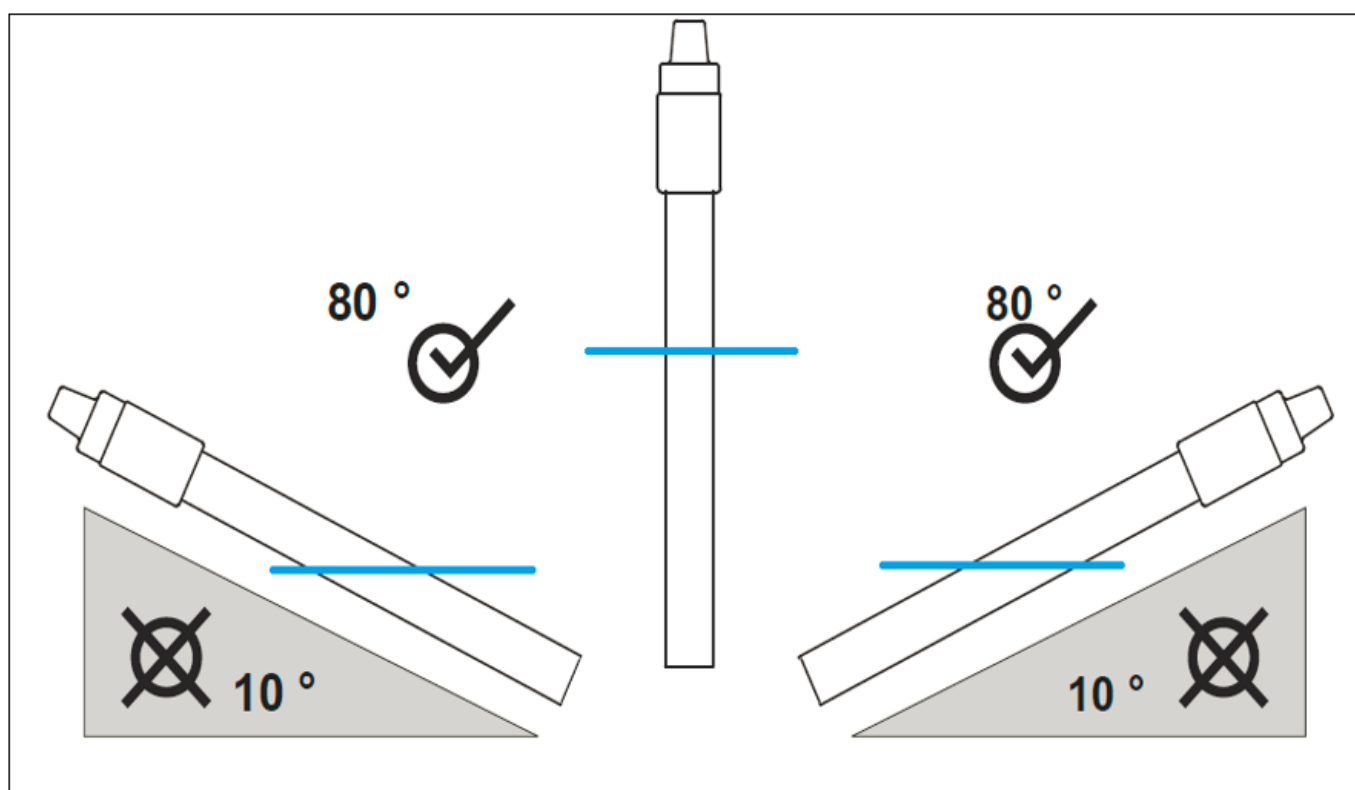


3. Before you turn on the device, connect the salinity probe, install the probe and the temperature sensor in your tank and then connect the device to power. The electrode has to be submerged in water between 7cm and 12cm measured from the tip of the probe. The length of the whole salinity probe is 16cm. The salinity probe should be mounted vertically but it is possible at an angle according to the graphic below. The blue line marks the maximum water level. Submerging whole salinity probe can cause permanent

damage which is not covered by warranty. The salinity probe shouldn't be installed near the RO water, dosing pumps and calcium reactor inlets as well as other devices that could disrupt the measurement. The temperature sensor has to be submerged half way deep in your tank. It can't be installed near the surface as the temperature can vary. From the moment the probe is immersed and the meter is started up, a stabilization period for the measurements is necessary, which may take up to seven days. Fluctuations in the measurement of salinity may occur during the stabilization period. After the probe has stabilized, recalibrate the salinity meter.



**ATTENTION: Salinity guardian is not waterproof. Avoid submerging the device in water. Submerging the device's display in water may cause permanent damage to the device.**



4. After the installation connect the device to power using dedicated power supply included in the box.
5. The device can be configured using a browser on your computer, laptop, tablet or smartphone. To do this, open the list of available Wi-Fi networks and find the network that name corresponds with serial number of the device, for example: **RFSGXXXXXXXXXX**. Our device works with 2,4 GHz bandwidth. To log in use password: **reeffactory**

6. Open the Internet browser on this same device and in the address box type in: [www.salinityguardian.io](http://www.salinityguardian.io)  
If you see the message below after you've entered the correct address in the address bar it means that you may be still connected to your home network (wired or wireless)

This domain is used to configure **Smart Reef** device.  
If you see this text it means that you are not logged properly into device Wi-Fi.

Please connect to the Wi-Fi device only (Wi-Fi password is **reeffactory**) and refresh this page.



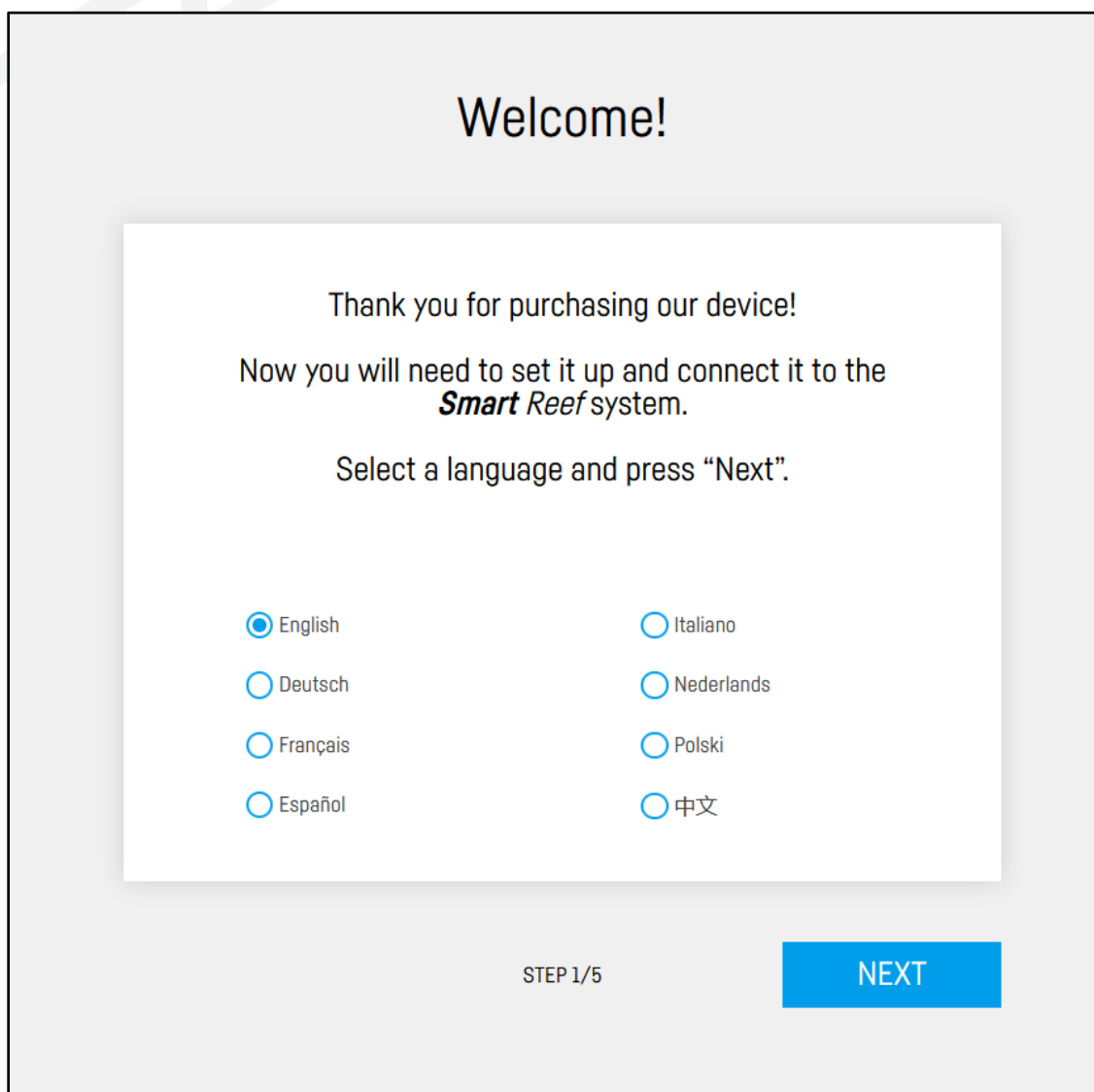
**REEF** FACTORY

Try to connect with the device one more time and repeat the procedure.

## II. Operation mode configuration

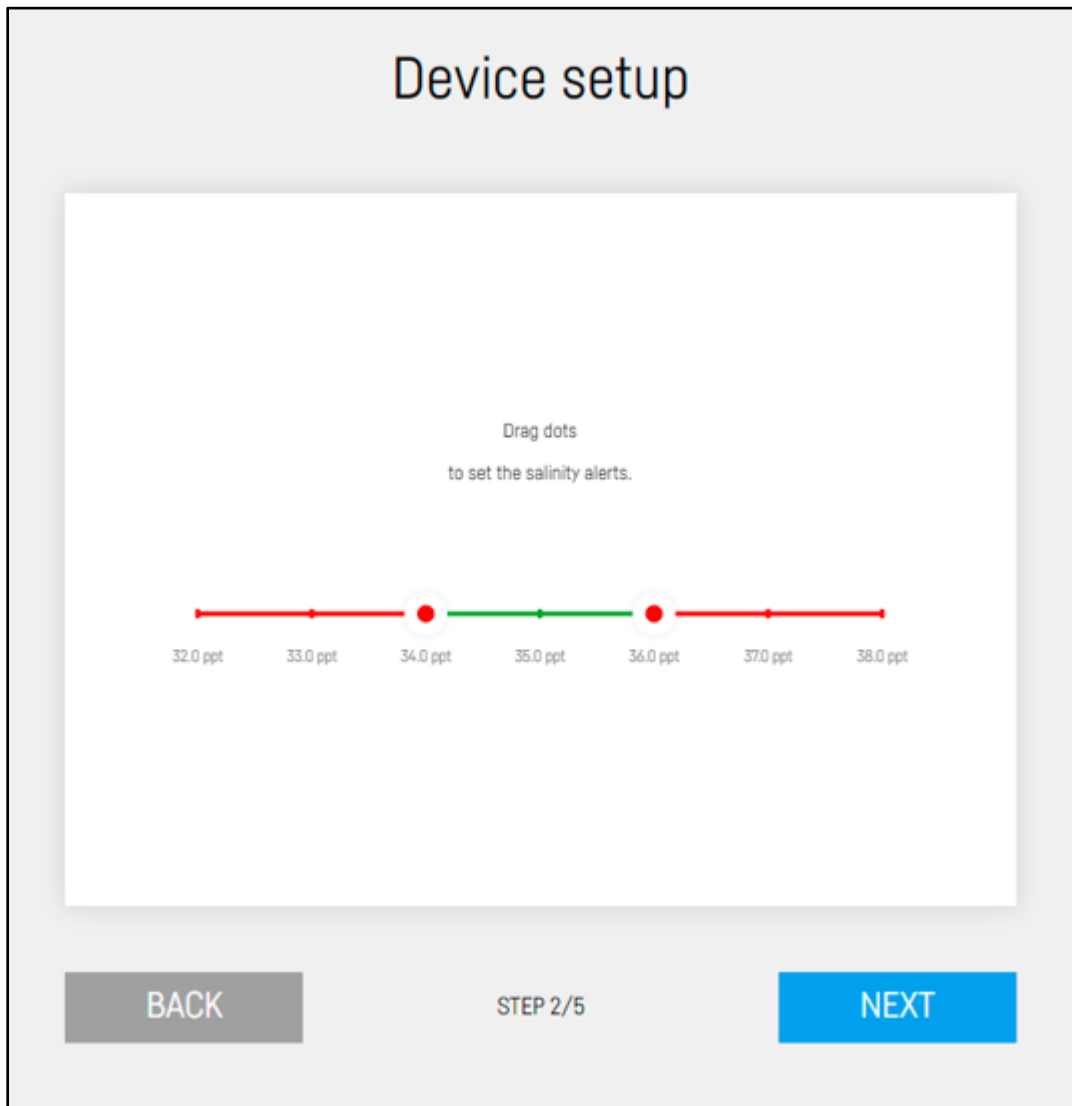
Configure the device in five simple steps.

**Step one** – chose language which you would like to use.

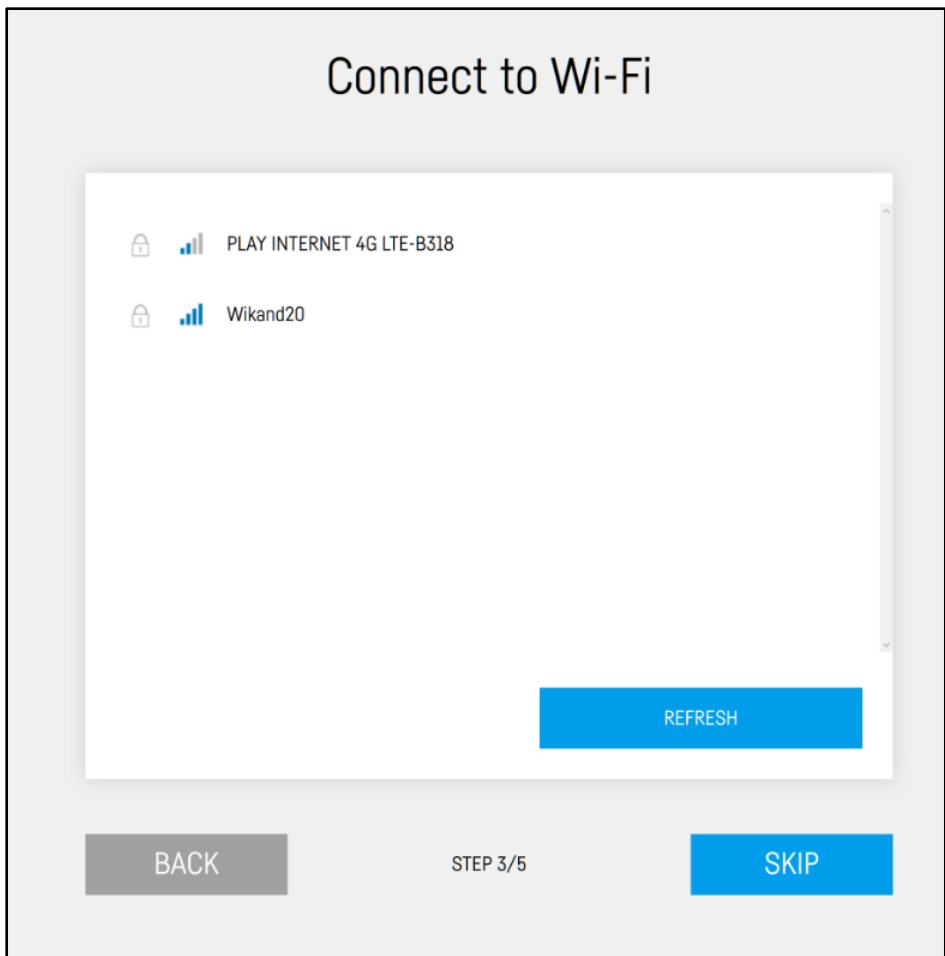


The screenshot shows a configuration screen with a light gray background. At the top, the word "Welcome!" is displayed in a large, bold, black font. Below this, a white rectangular box contains the following text: "Thank you for purchasing our device! Now you will need to set it up and connect it to the **Smart Reef** system. Select a language and press "Next".". Underneath the text, there are two columns of radio button options. The first column includes "English" (selected), "Deutsch", "Français", and "Español". The second column includes "Italiano", "Nederlands", "Polski", and "中文". At the bottom center of the screen, the text "STEP 1/5" is visible. To the right of this, there is a blue rectangular button with the word "NEXT" in white capital letters.

**Step two** – set the salinity limits for your tank. To set the desired limits „grab” with your cursor or your finger and slide it to the desired position on the scale. The default limits are 34ppt and 36ppt. You can also set the sound alarm to be triggered when the maximum or minimum value is exceeded.



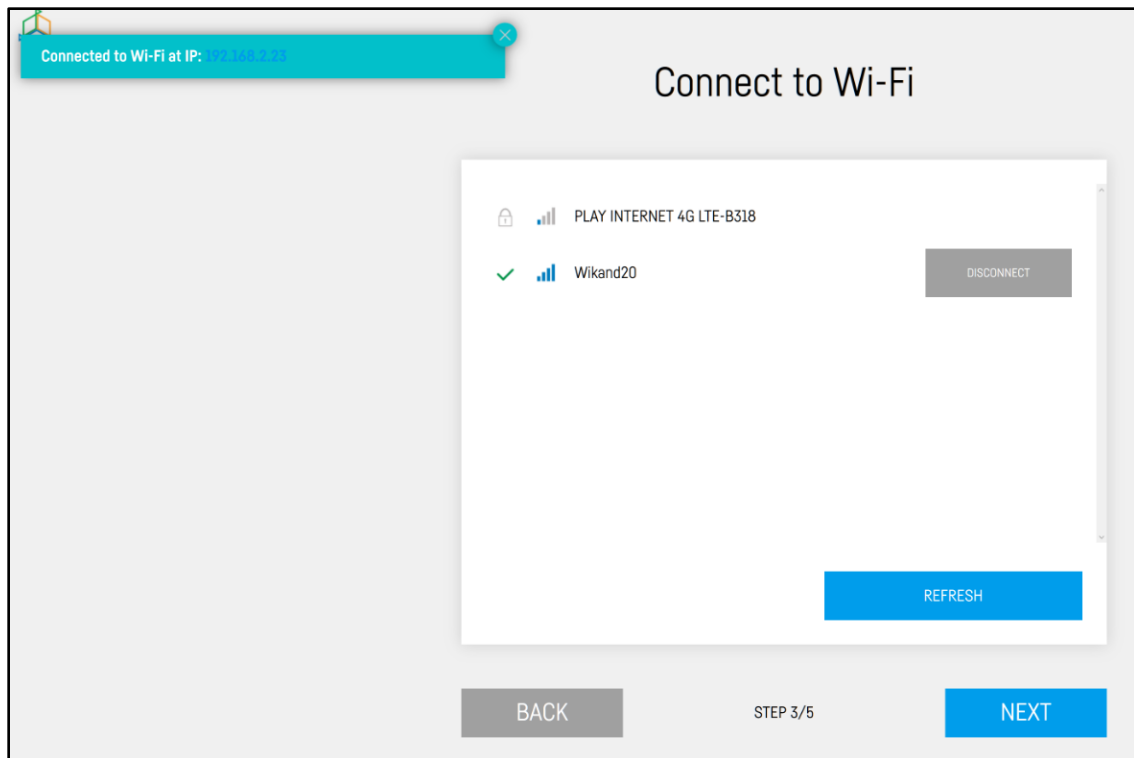
**Step three** - connect the device to your home Wi-Fi network. If the network is secured, enter the password that protects your home network against unauthorized access.



If the device cannot connect to your home Wi-Fi network at first, repeat the procedure. Successful connection may depend on the type of network device you use and its manufacturer. The signal of your wireless network should be as strong as possible. Remember that in order to enable communication with the **Smart Reef** system, the network device which is connected to **Salinity guardian** needs to have Internet access.



When the **Salinity guardian** successfully connects to your Wi-Fi network, its IP number will appear in the upper left corner of the screen.



The appearance of the IP number means that everything is alright.

**Step four** – create a free Smart Reef account, by pressing the “Create a free account” button.

Log in to *Smart reef*

E-mail

Password

[Forgot password?](#)

Log in

New to *Smart reef*

Set up Free account

BACK

STEP 4/5

SKIP

If you already have a **Smart Reef** account, enter your login data to add your new device to the system.

Create a free account

Email

Password

too short

Re-enter password

too short

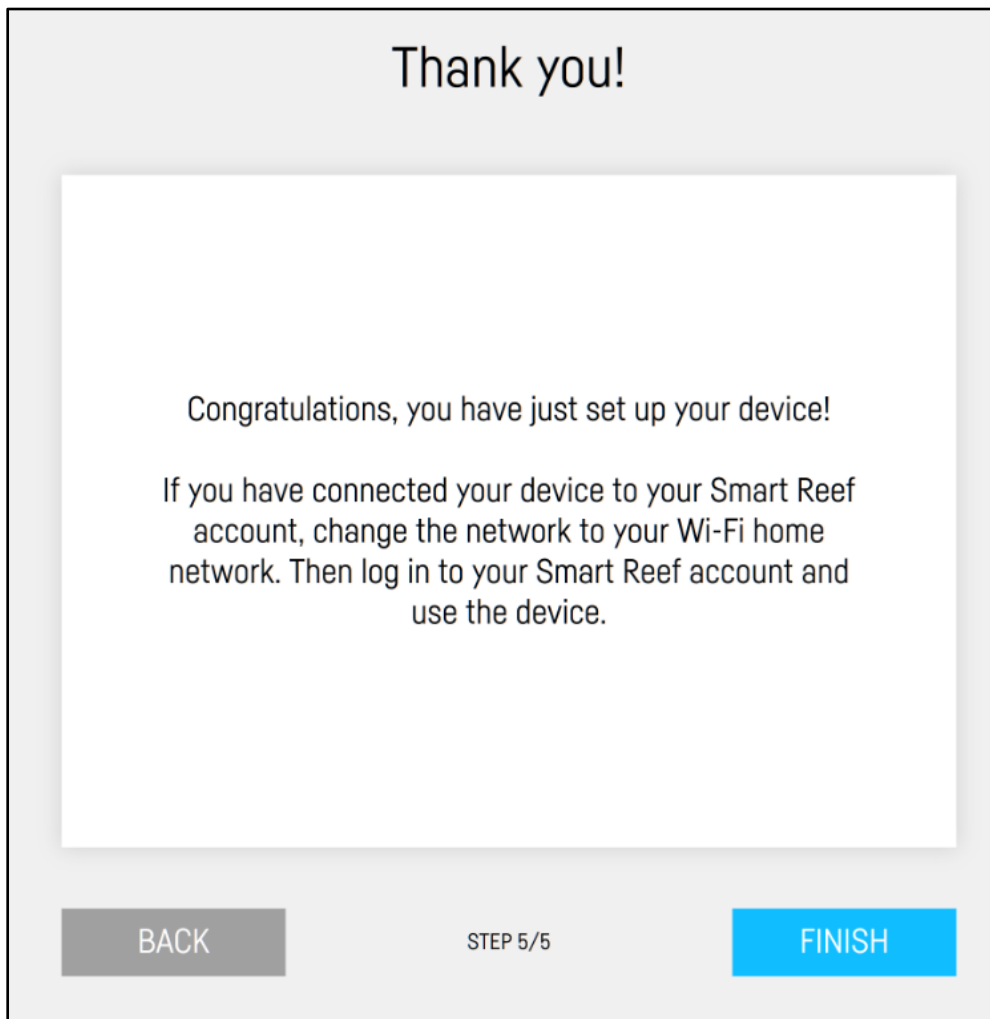
Create



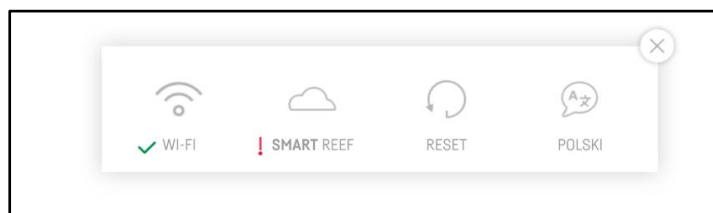
**The password should be sufficiently complicated and hard to crack.**

This way, you will be able to operate the device remotely and access its additional functionalities. If you already have a **Smart Reef** account, enter your login data to add another device. If you don't need to manage your device remotely, you may ignore this step. However, by doing so you will miss out on several additional features, such as access to device updates.

**Step five** – congratulations, you have successfully set up your **Salinity guardian** device.

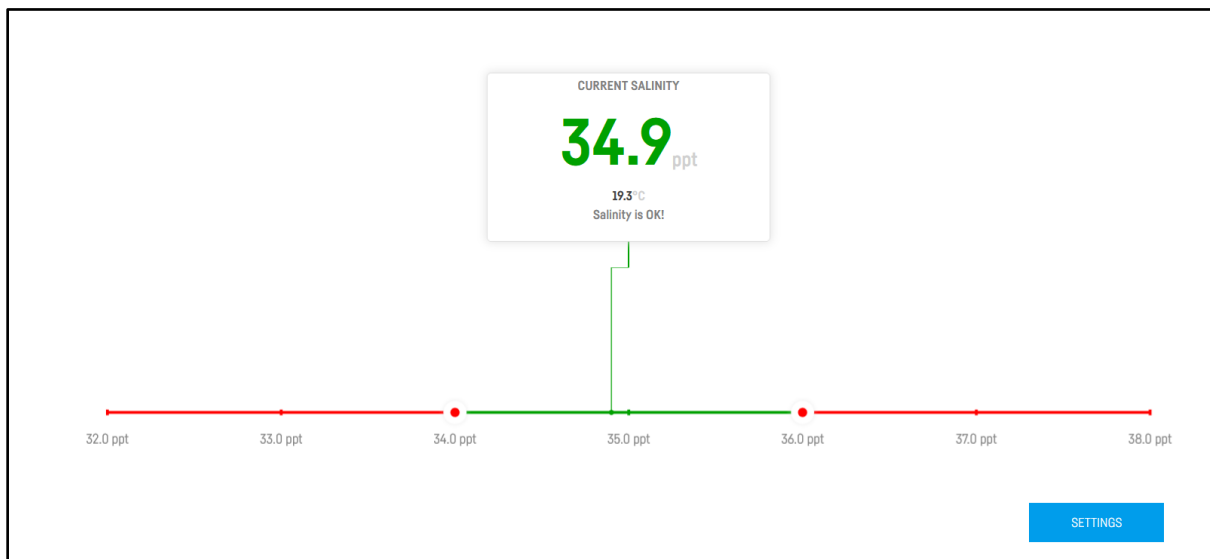


Notice the icons located in the upper right corner of the screen. They make it possible to change the date and time, language, view the history of notifications registered by the device, contact us and access many more interesting features offered by the device.



✓ symbol means that the device is connected while ! means there is no connection.

After the setup procedure is finished (after pressing the “FINISH” button), the screen will display the current status of your device as well as additional options.



The accuracy of the measurement is 0,1 ppt in the 30-40 ppt range. Maximum and minimum range of the measurement are 0-60 ppt. Temperature sensor simultaneously measures temperature and compensates the salinity measurement according to the temperature readout. The salinity probe is very sensitive for current leakage and grounding problems. If the measurement is not correct or changes rapidly please make sure there is no current leakage in your aquarium. To do this, calibrate the device and perform test measurements outside the aquarium, for example in a glass.

### III. Device calibration

To ensure the accuracy of the measurement after the initial stabilization time you need to perform calibration. You need to calibrate temperature sensor and the salinity probe. To calibrate the device you will need calibration solution of 35 ppt (included in the box) or substitute, for example calibration solution of 53 mS/cm. The temperature of the calibration solution should be 25 °C [or 77 °F]. To ensure that the measurements are accurate we recommend calibrating the device every month.

#### 1. Temperature sensor calibration.

The temperature sensor is factory calibrated, but for the highest accuracy possible please perform the calibration. Put the temperature sensor in the water that temperature is known (you can measure the temperature with the thermometer). In the menu that can be found in the lower right corner tap/click

SETTINGS

and then TEMPERATURE CALIBRATION

. Follow the steps displayed on the screen.

Remove the temperature sensor from the water and immerse it in water of known temperature. Wait 60 seconds and press OK.

OK

CANCEL

Put the measured temperature in the box.

Enter the correct value of the measured water temperature.

25

OK

CANCEL

Confirm the temperature value.

The device is now calibrated. Remember to repeat this procedure systematically.

OK

Now, in the menu you will see additional information about the temperature difference between the measured value and the reference value.

TEMPERATURE CALIBRATION  
-0.2 °C

**1.** Salinity probe calibration.

Salinity probe is factory calibrated, but to ensure the highest accuracy of the measurement please perform the calibration. The temperature sensor calibration should be performed before the salinity probe calibration to make sure the salinity probe was calibrate accurately. If the temperature sensor was already calibrated tap/click **SETTINGS**, and then **PROBE CALIBRATION**.

Before calibrating the probe, it is recommended to first calibrate the temperature sensor.

PROBE CALIBRATION


TEMPERATURE CALIBRATION

Pat dry the salinity probe and the temperature sensor, then put them both to the calibration solution 35 ppt (included in the box) or use a substitute, for example calibration solution of 53 mS/cm. The calibration fluid temperature should be exactly 25 °C [or 77 °F]. In the menu select the **PROBE CALIBRATION** button and proceed according to the steps displayed on the screen.

Before calibration, remove both probes from the water and dry it. Then immerse both probes in a 53.0 ms/cm (35 ppt) calibration solution with temperature around 25°C. Then after 60 seconds select "OK".

OK

CANCEL

After about 60 seconds confirm the calibration process was completed by pressing the  button.

The device is now calibrated. Remember to repeat this procedure systematically.

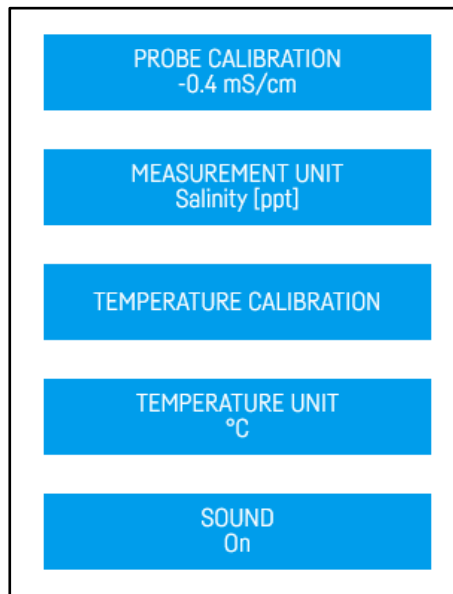
OK

The calibration process of the salinity probe has been finished. To ensure high accuracy of the measurement we recommend calibrating the probe every month.

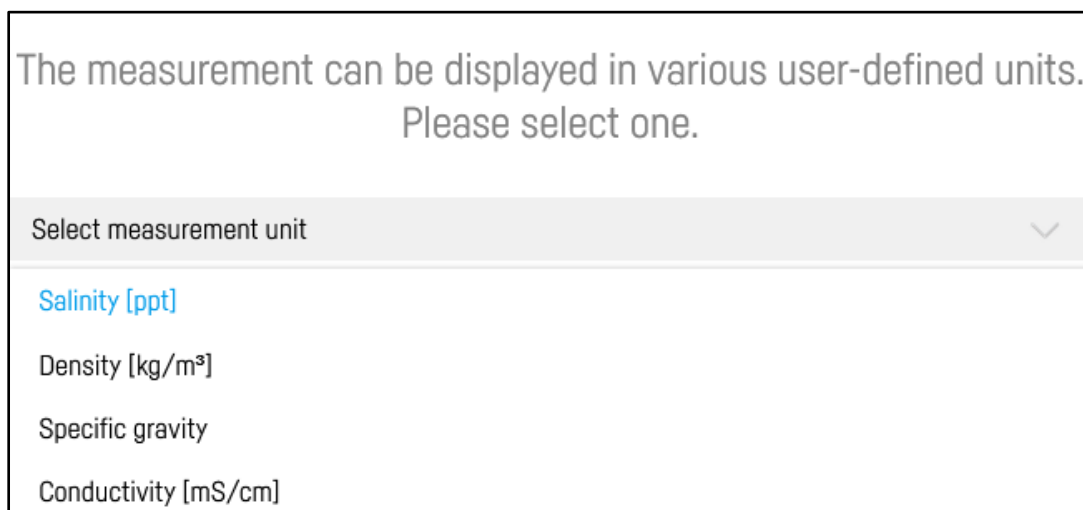


## IV. Device configuration

In the menu placed in the lower right corner select the **SETTINGS** button. On the screen you should see main menu, which allows for changing the additional settings.



1. Probe calibration – this function has been described in the Device calibration chapter of this manual.
2. Salinity unit – this option allows for changing one of the available units for salinity measurement. Choose the one that is best suited for you.



3. Temperature calibration – this function has been described in the Device calibration chapter of this manual.
4. Temperature unit – this option allows for changing one of the available units for temperature measurement. Choose the one that is best suited for you.
5. Sound – this function allows for turning the alarm ON and OFF. If the salinity value is outside the desired range it will signal the user with the audible alarm.

## V. Resetting the device

---

If your device does not work properly, or you want to repeat the setup procedure, or you cannot connect to it despite several attempts, you may restore it to its default settings by placing a magnet (included in the package) on the housing in the place shown in the picture at the beginning of this manual.



Place the magnet in the indicated place near the **Reset** sticker.

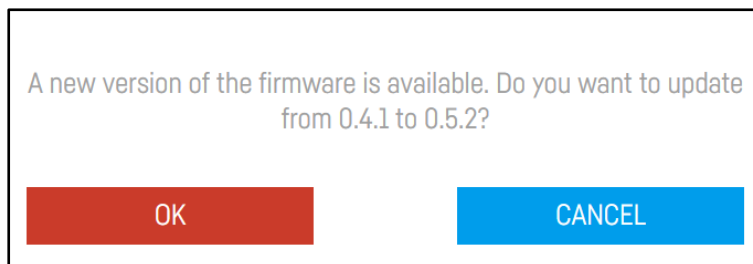
## VI. Smart Reef system

---

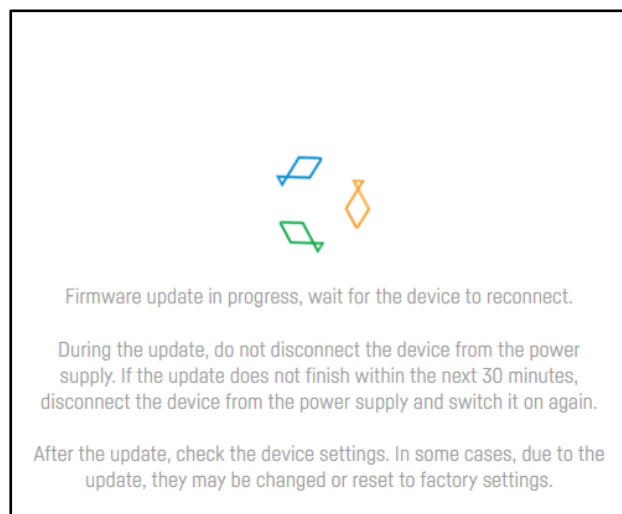
Connect to your Internet network via a computer or a mobile device. Next, go to [www.reeffactory.com](http://www.reeffactory.com) and log in to your **Smart Reef** account. Check, if your device has been properly added to the list of your devices.

You can change its name and assign it to one of your aquariums. The serial number of your device and its firmware version are displayed in the lower right corner of the screen.

Our devices are SMART; therefore, we constantly improve them. From time to time, you will receive information about firmware updates that will make your device work even better.



By pressing the OK button you will start the automatic device update process.



**Additional and up-to-date information about the device, its operation and setup can be found at our website [www.reeffactory.com](http://www.reeffactory.com), in the relevant product tab.**

## VII. Technical problems and their possible causes

The table below presents the typical problems that you can encounter when using the device and solution to these problems.

 <b>Problem</b>	 <b>Possible cause</b>	<b>Solution</b>
The device does not power on and does not broadcast Wi-Fi signal	No power	Check if the power cord is properly connected to the socket. Then, use the magnet to bring the device to the factory settings. Check if the problem has been resolved.
Can't log in to the device	No direct connection between the device and your phone/computer	Check if your computer or phone is connected to the device's network. Sometimes it automatically connects back to your home network. Check if the problem has been resolved.
The device is not visible in the Smart Reef	The device has not been properly connected to your home network or is not logged in to the Smart Reef	Log in to the device and check if the Smart Reef and Internet status icons are displaying that the device is properly connected. If they are not, please log in to your account or connect the device to your home network.
The device loses the connection to the Smart Reef	The range of your home network is not sufficient	Remember, that your home network can have different signal strength in different rooms. It could be too low in the vicinity of the device. Try to move the device closer to your router or use a repeater to extend your home network range in the area. Check if the problem has been resolved.
The device does not broadcast Wi-Fi or you can't log into the device.	The device may require a reset	Put the magnet against the designated spot on the housing, wait for 5 seconds. Open the list of available networks, connect with the device and perform configuration.
Err message displayed on the screen	Salinity probe failure	Salinity probe is damaged or worn out and has to be replaced.
Salinity measure is unstable or changes rapidly	Incorrect installation of the salinity probe and the temperature sensor in the tank. For example next to the heating element or RO refill	Change the salinity and the temperature placement according to the manual. Check if the problem has been resolved.
Salinity measure is constant and does not change	Salinity probe is missing or it is not properly connected	Check if the probe is properly connected and the BNC plug is locked. Disconnect the probe and connect it again. Check if the problem has been resolved.
The readout is out of range	Incorrect calibration of the probe or current leakage in the tank due to failure of other device (for example heating element)	Recalibrate the probe. Take test measurements outside the tank. For example inside of the glass. If the measurement is correct, it means that there is current leakage coming from one of your other devices. It is necessary to find the faulty device and discontinue use.
The readout is unstable	Using different power supply	The salinity meter is very sensitive to the quality of the power supply. Using aftermarket power supply can cause unstable measurements. Using aftermarket power supplies is forbidden.

The salinity measurement in the tank is lower compared to the measurement outside the tank

Current leakage in the tank due to other device failure (heating element). The salinity probe wire is near the power cords of other devices that are causing disruptions.

1. There is current leakage coming of one of your other devices. It is necessary to find the faulty device and discontinue use.
2. Check if near there is no power cords near the signal cable. This can cause disruptions of the signal.



If the above methods have not worked, please contact us and describe your problem by writing to [support@reeffactory.com](mailto:support@reeffactory.com). Additional and up-to-date information about the device, its operation and setup can be found at our website [www.reeffactory.com](http://www.reeffactory.com), in the relevant product tab.

**REMEMBER:** Never repair the device yourself unless you have the right expertise and experience. The device is powered by voltage ranging from 110 to 230 V, and working with live devices may cause electric shock, loss of health or even life.

## VIII. Dedicated power adapter - user guide

---

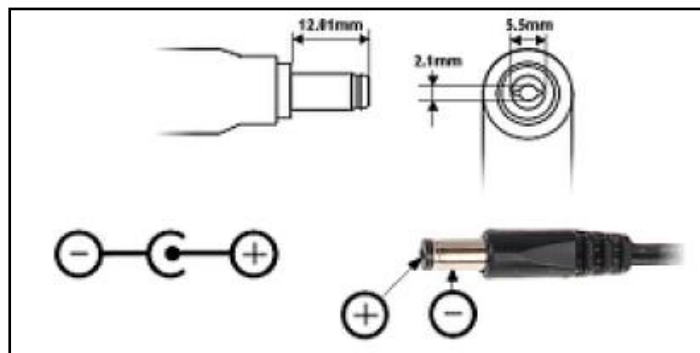
1. Make sure to connect the power adapter first to the device and next to power supply.
2. The power adapter is supplied from the grid. There is a risk of electric shock. Do not remove the power adapter housing yourself!
3. There is a risk of fire or electric shock. Leave the power adapter vents exposed to enable natural air circulation and protect the device from foreign objects or liquid spillage.
4. Using a wrong DC plug or forcing the DC plug into an electronic device may cause damage to the device or its malfunction.
5. Desktop power adapters should be placed on a stable surface. Falling can lead to permanent damage.
6. Do not place power adapters in high humidity locations or near water.
7. Do not place power adapters in high ambient temperature locations or near sources of heat or fire.
8. The output current and output power must not exceed the rated values provided in the specification.
9. Disconnect the device from power supply before cleaning. Do not use liquid or aerosol cleaners. Only use a damp cloth for wiping.
10. To dispose of this product, contact a local licensed recycling company. Do not dispose of your power adapter with mixed municipal waste.

The table below lists the power adapters dedicated for our devices along with the models and names of the devices they can be used with.

<b>Power adapter model</b>	<b>Power adapter parameters</b>	<b>Power adapter specification</b>	<b>List of compatible devices</b>
TPS-1201000ZZ	Plug power adapter 12 V 1 A DC	Input voltage: 100-240 V AC Operating frequency: 50-60 Hz Maximum input current: 0.6 A Output voltage: 12 V DC [11.4-12.6 V] Output current: Max. 1 A Input connector type: DC 5.5/2.1	<ol style="list-style-type: none"> <li>1. Level sensor *</li> <li>2. Thermo view *</li> <li>3. pH meter Plus *</li> <li>4. TDS meter Plus *</li> </ol> <p>* First generation devices were powered by a 3.3 V 2 A power adapter. Before purchasing a power adapter, contact us to find out which power adapter is suitable for your device.</p>
TPS-1202000ZZ	Plug power adapter 12 V 2 A DC	Input voltage: 100-240 V AC Operating frequency: 50-60 Hz Maximum input current: 0.6 A Output voltage: 12 V DC [11.4-12.6 V] Output current: Max. 2 A Input connector type: DC 5.5/2.1	<ol style="list-style-type: none"> <li>1. Dosing pump</li> <li>2. Dosing pump Pro</li> <li>3. Dosing pump X3</li> <li>4. Salinity guardian</li> </ol>
TPS-1204000ZZ	Plug power adapter 12 V 4 A DC	Input voltage: 100-240 V AC Operating frequency: 50-60 Hz Maximum input current: 1.2 A Output voltage: 12 V DC [11.4-12.6 V] Output current: Max. 4 A Input connector type: DC 5.5/2.1	<ol style="list-style-type: none"> <li>1. Dosing pump Large</li> </ol>
GST120A24R7B	Desktop power adapter 24 V 5 A DC	Input voltage: 85-264 V AC Operating frequency: 47-63 Hz Maximum input current: 1.4 A Output voltage: 24 V DC [23.8-25.2 V] Output current: Max. 5 A Input connector type: R7B 4 PIN	<ol style="list-style-type: none"> <li>1. Reef flare S</li> <li>2. Reef flare Pro S</li> </ol>
GST220A24R7B	Desktop power adapter 24 V 9.2 A DC	Input voltage: 85-264 V AC Operating frequency: 47-63 Hz Maximum input current: 1.7 A Output voltage: 24 V DC [23.8-25.2 V] Output current: Max. 9.2 A Input connector type: R7B 4 PIN	<ol style="list-style-type: none"> <li>1. Reef flare M</li> <li>2. Reef flare Pro M</li> <li>3. Reef flare L</li> </ol>

GST280A24R7B	Desktop power adapter 24 V 11.67 A DC	Input voltage: 85-264 V AC Operating frequency: 47-63 Hz Maximum input current: 2.0 A Output voltage: 24 V DC [23.8-25.2 V] Output current: Max. 11.67 A Input connector type: R7BF 4 PIN	1. Reef flare Pro L
GST280A24R7B	Desktop power adapter IDLC-45A-500	Input voltage: 90-295 V AC Operating frequency: 47-63 Hz Maximum input current: 0.16 A Output voltage: 35-50 V Output current: Max. 0.5 A Input connector type: N/A	1. Reef flare Bar S 2. Reef flare Bar M
GST280A24R7B	Desktop power adapter IDLC-45A-1050	Input voltage: 90-295 V AC Operating frequency: 47-63 Hz Maximum input current: 0.4 A Output voltage: 16.8-24 V Output current: Max. 1.05 A Input connector type: R7BF 4 PIN	1. Reef flare Bar L

DC 5.5/2.1 connector:



R7B and R7BF connector:

