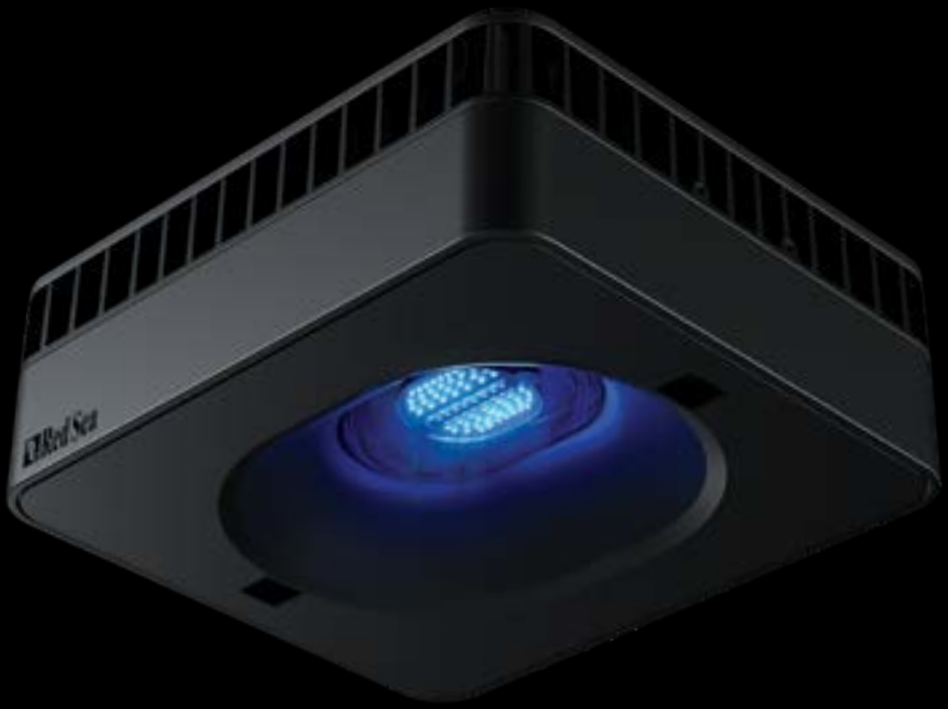


ReefLED® G2

User Manual

ENG

Red Sea

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Introduction

Congratulations on your purchase of Red Sea's ReefLED®.

Years of development are behind Red Sea's ReefLED Wi-Fi lights which have been designed to ensure optimal coral growth and maximum rendition of their vibrant colors.

At the heart of the unit is a compact LED array that provides a full range of REEF-SPEC® light from 8,000K to 23,000K.

This is created by blending the light output of an 8,000K white together with the 23,000K bespoke ReefSpec blue, which is a combination of LED chips in the 380 - 480nm spectrum, that are 100% utilized by corals.

In addition, it has a separate dedicated moonlight channel to provide low levels of light for reef-safe nighttime viewing. The compact LED array is under an optical glass, hollow lens that creates homogeneous light, giving dramatic coral coloration and a gentle shimmer throughout the aquarium.

ReefLED can only be operated by Red Sea's ReefBeat® app which must be installed on a smartphone with internet connectivity. ReefBeat provides a wide range of easy-to-use functions including notifications if there is a loss of communication with your ReefLED- such as in the case of power failure.

ReefBeat® is under constant development and over time will include additional connected devices as well as additional aquarium management tools.

Welcome to Red Sea's smart reef-keeping.

Sincerely,
The Red Sea Team

Specifications

	ReefLED® G2 60	**ReefLED® G2 115**	**ReefLED® G2 170**
Compact LED array 8,000K to 23,000K	60W	115W	170W
Moonlight	3W	3W	3W
PAR at water surface	500 µmol/m²/sec	500 µmol/m²/sec	550 µmol/m²/sec
PAR at depth of 50cm/20"	100 µmol/m²/sec	150 µmol/m²/sec	160 µmol/m²/sec
PAR at depth of 80cm/32"	-	-	130 µmol/m²/sec
Coverage	50x50cm / 20x20"	60x60cm / 24x24"	80x80cm / 32x32"
Recommended max spacing	40cm / 16"	50cm / 20"	75cm / 29"

Safety

PLEASE READ AND FOLLOW ALL SAFETY INSTRUCTIONS

DO NOT LOOK DIRECTLY AT LEDS REGARDLESS OF INTENSITY.

THIS DEVICE IS INTENDED FOR INDOOR USE ONLY.

CAUTION: When switched on, contact with the LED lens may cause burns. Allow to cool before touching, adjusting or servicing.

DANGER: To avoid possible electric shock, special care should be taken when handling a wet aquarium. For each of the following situations, do not attempt repairs yourself; return the appliance to an authorized service facility for service or discard the appliance.

WARNING: To guard against injury, basic safety precautions should be observed, including the following:

Do not operate any appliance if it has a damaged cord or plug, if it is malfunctioning, or if it is dropped or damaged in any manner.

To avoid the possibility of the appliance, plug or receptacle getting wet, position the aquarium stand and tank to one side of a wall-mounted receptacle to prevent water from dripping onto the receptacle or plug. You should create a "drip loop" (see Figure 1) for each cord connecting an aquarium appliance to a receptacle. The "drip loop" is that part of the cord below the level of the receptacle, or the connector. Use an extension cord, if necessary, to prevent water traveling along the cord and coming into contact with the receptacle.

If the plug or receptacle does get wet, **DO NOT** unplug the cord. Disconnect the fuse or circuit breaker that supplies power to the appliance. Then unplug the device and examine for presence of water in the receptacle.

Close supervision is necessary when any appliance is used by or near children.

To avoid injury, do not contact moving parts.

Always unplug an appliance from an outlet when not in use, before putting on or taking off parts, and before cleaning. Never pull the cord itself to remove the plug from the outlet. Grasp the plug and pull to disconnect.

Do not use an appliance for anything other than its intended use. The use of attachments not recommended or sold by the appliance manufacturer may cause unsafe conditions.

Do not install or store the appliance where it will be exposed to the weather or to temperatures below freezing point.

Make sure an appliance mounted on a tank is securely installed before operating it.

Read and observe all the important notices on the appliance.

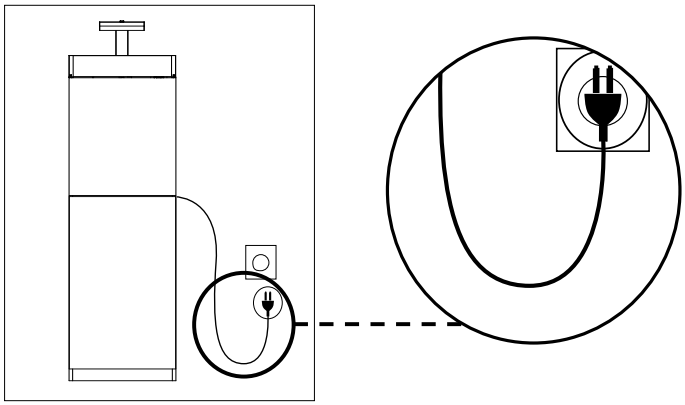
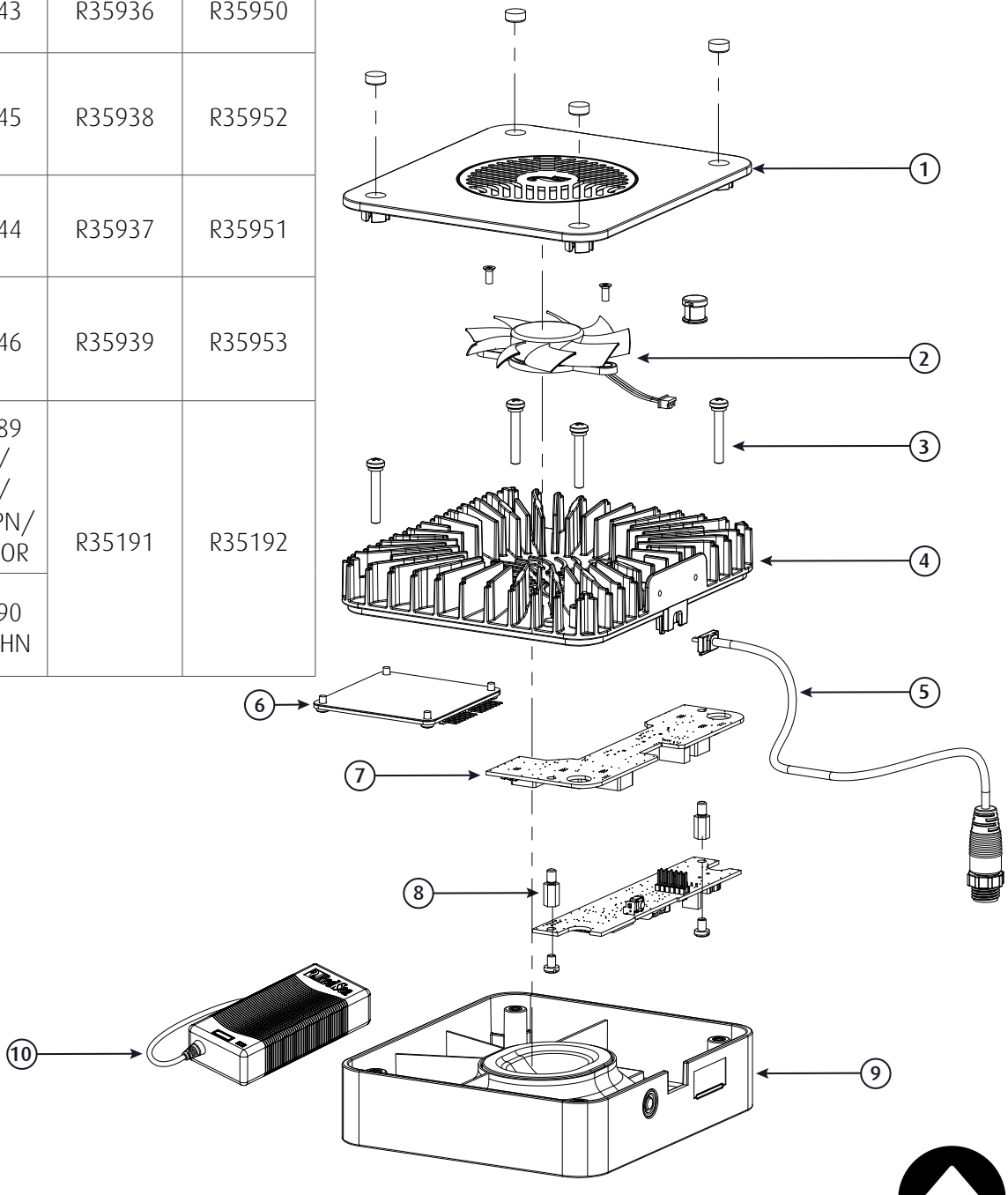


Figure 1: Drip loop

Note: A cord rated for less amperes or watts than the appliance rating may overheat. Care should be taken to arrange the cord so that it cannot be tripped over or pulled accidentally.

Part ID	Part Description	ReefLED® G2 60	ReefLED® G2 115	ReefLED® G2 170
1	Fan Cover	R35942	R35935	R35949
2	Fan	R35162	R35152	R35176
3	Housing Screws	R35159	R35159	R35159
4	Aluminum Body	R35947	R35940	R35954
5	DC Cable	R35160	R35158	R35183
6	LED Array	R35943	R35936	R35950
7	Electronic Board Bottom	R35945	R35938	R35952
8	Electronic Board Top	R35944	R35937	R35951
9	Housing (including lens)	R35946	R35939	R35953
10	Power Supply	R35189 USA/ GBR/ AUS/JPN/ BRZ/KOR	R35191	R35192
		R35190 EUR/CHN		



ReefLED G2 - How it works

Color, Power & Intensity

The control of the ReefLED G2 is based on selecting the desired color, defined by its approximate Kelvin (color temperature) rating, between the 8,000K and 23,000K extremes. Each color is created by a different ratio between the blue and white LEDs, which is then maintained as the intensity of the selected color varies from 0 to 100%.

When set to maximum, the 8,000K white will use approximately 30% of the power rating of the unit, while the 23,000K blue can use its full power.

Between 8,000K and 10,000K as more blue light is added, the power consumption gradually increases from 30% to 100%. All the color options between 10,000K and 23,000K run at the full power output of the unit as the available power is dynamically shared between the LEDs for maximum brightness.

Setting a day-program

The G2 program interface allows the setting of 15 different points during the day starting at Sunrise and ending at Sunset. Apart from the Sunrise and Sunset points, which are preset to having zero light output, it is possible set a unique color and intensity at each point in the day program. This allows for gradual transitions in color and intensity from one point to the next.

Exposure (Power, PAR & PUR)

Whiter light (lower Kelvin) has a higher brightness/watt than bluer light (higher Kelvin), so to the human eye, whiter light with a lower power consumption looks brighter than bluer light with a higher power consumption. ReefSpec Blue light is 100% useable by corals, however, some of the spectrum that make up white light is not usable by corals and therefore its use should be limited. Corals can only tolerate about 5 hours per day of 8,000K white light as opposed to 12 hours per day of bluer light of 15,000K and above. These times relate to the light at 100% intensity, so lower intensity can be used for a longer time.

The recommended “Exposure” of corals to light is a function of the color, intensity, and photoperiod. The ReefBeat App presents the light Exposure of each time-period between consecutive points as a percentage of the recommended daily total and presents the Total Exposure (sum of all the time-periods) for the complete day program. Try to keep the Total Exposure close to 100% and ensure that corals have at least 10 hours of darkness.

Introduction to the ReefBeat app

All of Red Sea's connected devices must be operated via the ReefBeat app installed on an Android or iOS smartphone with an internet connection.

Through your personal user account on the cloud, ReefBeat enables you to set up and manage any number of aquariums and add multiple devices to each of them. By default, all devices of the same type (such as ReefLED) will be grouped together and, where appropriate, identical settings will be applied to all devices in the group. Any device can be ungrouped at any time and have full functionality as an independent unit.

For full functionality, each ReefLED must have a permanent connection to the internet through your home Wi-Fi network. In this mode of operation, you will be able to see the current status of your ReefLEDs, change the settings or receive notifications on your smartphone whenever you have access to the internet.

The ReefBeat homepage will show you the current status of all of your connected devices, and links you directly to the Settings Dashboard for each group or for individual units.

You can install the ReefBeat on multiple smartphones by entering the same user account details. All smartphones will have the same rights for operating and changing all of the settings. You should keep this in mind before giving your user details to any 3rd party.

In the event that you do not have a home network or your home network does not have an active internet connection, you can connect and control your ReefLEDs in Offline or Direct Mode. However, certain functionality such as remote access, multiple smartphones or status notifications will not be available.

ReefBeat is constantly under development. For the most up to date operation instructions, view or download the latest user guide from the Red Sea website at www.redseafish.com

If this is your first Red Sea connected device, it is recommended that you complete the physical installation of your ReefLED units before installing the ReefBeat app.

Installation

Mount the ReefLED above the aquarium as shown in the assembly instructions of the mounting system you purchased. Make sure that no part of the ReefLED gets wet, especially the DC jack.

In the event that you are not using a Red Sea mounting system, please ensure the following:

- The ReefLED must be fastened securely so that it cannot accidentally be dislodged from its mounting.
- The top surface and sides must have unrestricted airflow for correct heat dissipation.
- Ambient temperature should be maintained below 25°C / 77°F.
- The distance between bottom surface of the ReefLED and water surface should be as follows:

ReefLED® G2 60	17cm / 6 ¾"
ReefLED® G2 115	21cm / 8 ½"
ReefLED® G2 170	31cm / 12 ¼"

Power Supply

Place the power supply in a dry ventilated area. Only use the power supply provided with the product.

Connect the AC cable to the socket of the power supply and plug it into the wall outlet or other suitable power center and check that the indicator LED on the power supply is working. If the indicator LED is not working, check that the AC cable is properly connected and the wall outlet is switched on.

Connect the DC jack of the ReefLED to the DC jack of the power supply. After powering on the unit, the Power indicator LED of the ReefLED will switch on and the Setting Indicator LED will be off.

LED Indicators

Power Indicator

Red light when DC power is available.

Settings Indicator:

- Solid Red light – ReefLED is connected to the Home network.
- Blinking Red light – ReefLED is in WI-Fi Access Point (AP) mode (can be discovered by Wi-Fi devices).
- Fast Blinking Red light - ReefLED is unable to reconnect to the home network.
- No Red light – ReefLED Wi-Fi is off.
- Double blink – indicates change of status / end of process.

Settings Button - Function

If indicator LED is off (ReefLED Wi-Fi is off):

Pressing button for 5 seconds (until double blink) activates Wi-Fi AP mode.

If indicator LED is blinking (ReefLED Wi-Fi is in AP mode):

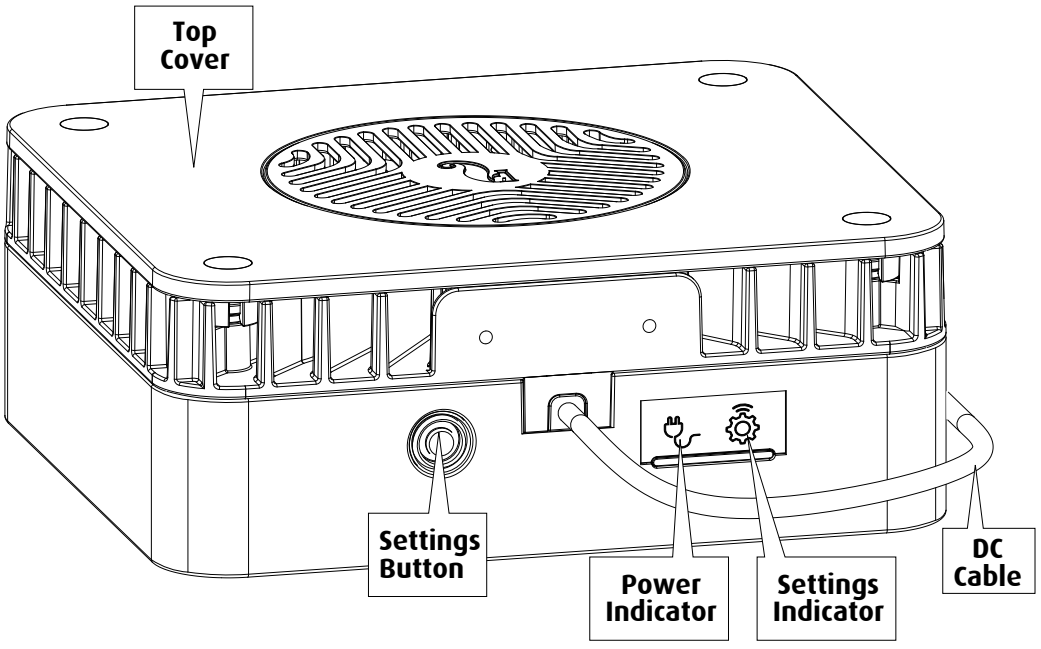
Pressing button for 5 seconds (until double blink) switches Wi-Fi off.

If indicator LED is on (ReefLED Wi-Fi is connected to a Wi-Fi network):

Pressing button for 5 seconds (until double blink) disconnects the ReefLED from the network and switches it to Wi-Fi AP mode. (Note: before disconnecting a ReefLED from a network, delete the specific ReefLED from ReefBeat via the Device Manager.)

Clear Settings (Hard Reset):

Pressing the button for 15 seconds (until double blink) deletes all user settings and returns the Wi-Fi to AP mode. (Note: before initiating "clear settings," delete the specific ReefLED from ReefBeat via Device Manager.)



Connection and initial setup

Installing ReefBeat

Download ReefBeat from the app Store or Google Play as appropriate for your smartphone. (In countries without access to Google Play an APK file and installation instructions can be downloaded from Red Sea's website.)

After installing ReefBeat, you will be guided through the set-up of your ReefBeat user account and aquariums, and then you can start adding your Red Sea connected devices. All of your user account details can be edited only when your smartphone is connected to the internet.

For full functionality Red Sea's connected devices should be connected to the internet and your aquariums should be set to "Online". In the event that you do not have an available Wi-Fi network at your Aquarium, set it as "Offline". You can change this setting later when WI-Fi becomes available.

Make sure that you select the correct world time zone for where your aquarium is located. The default is the same time zone as your smartphone which might be set for a different location.

If you've set up more than one aquarium, select the aquarium from the dropdown menu at the top of the screen before proceeding.

Adding your first ReefLED to ReefBeat

Set your ReefLED to AP mode by pressing the settings button for 5 seconds (until double blink). The indicator LED should be blinking.

Tap the Add Device button (+) from the Device Manager page, select the ReefLED icon and follow the instructions on the app. The unique serial number of the ReefLED should appear on your screen. This may take a few seconds. If no devices appear on the list, check that the ReefLED is in AP mode and/or refresh the page. If you have installed multiple ReefLEDs and you have already activated the AP mode on all of them, you will see a list of all of the ReefLEDs. Choose any one of them as the first unit and continue as instructed by the app.

Connecting to the Home Network

ReefBeat will now display a list of Wi-Fi networks and signal strengths that are available to the ReefLED from its current location. Note: if the ReefLED is not in its position above the aquarium, your preferred network may not be accessible when the ReefLED is repositioned.

Select your preferred network and wait a few moments while the ReefLED connects to it. The indicator LED will now be a solid red. Follow the instructions on the app for initial settings.

Connecting without a Home Network (Direct Mode)

ReefBeat will now display a list of Wi-Fi networks and signal strengths that are available to the ReefLED in its current location. Select the "Direct Mode" option at the top of the screen to skip the network connection (See Connectivity Modes).

The indicator LED will continue to blink as the ReefLED WI-Fi remains in AP mode. Follow the instructions on the app for initial settings.

Note: If you are planning on using multiple ReefLEDs or other Red Sea connected devices, it is recommended to connect them all to a Wi-Fi network even if the network is not connected to the Internet and will be operated in "Offline Mode". (See Connectivity Modes)

Initial settings

The unique serial number of each ReefLED is the default name for the device in the app. However, you can set a new name that you prefer such as “Left LED”, “Right LED” etc. These names can be changed at any time using the “Rename” function from the Device Manager.

For the first ReefLED you connect to your aquarium, you can choose between 3 options: Two preset REEF-SPEC® Kelvin settings that will be applied to the standard “same color all day” programs, and a “Choose Your Color” option which allows you to view and select from the full range of color blends from 8000K to 23,000K that are available.

Note: It is not recommended to use colors that are lower (whiter) than 15,000K for the standard day program.

You must then set the Sunrise time for Red Sea’s default preset Day program (D-Program) which is 11-hours of daylight, 3 hours of moonlight and 10 hours of complete darkness. The preset includes 1-hour of gradual sunrise/sunset and moonrise/moonset. The default programs are set with the sunrise at 8:00am. Selecting a different sunrise during the initial setup will create a new D-Program which will be saved in your personal Program Library.

ReefBeat will now display the ReefLED Dashboard and your ReefLED will implement the intensity for each channel according to the current time of day. If you are installing the ReefLED outside of the day/moon light period (i.e., during the complete darkness period), the light will not switch on and the settings screen will show zero for all channels. All of the settings on the Dashboard are now editable. To go to the ReefBeat homepage without editing, press the back arrow twice.

Adding additional ReefLED units

To connect an additional unit, open the Device Manager page from the Dashboard 3-dot menu and repeat the process as above. Make sure that you connect all the units for one aquarium to the same home network.

If you have connected the ReefLED to your home network, all additional units connected to this aquarium will automatically be “Grouped” together and will operate as a single luminaire. Individual units can be “Ungrouped” (see Device Manager) if you wish to operate them as independent units.

Note: Different models of ReefLED units cannot be in the same group.

If you are connected in Direct Mode, all additional units will be “Ungrouped” by default and must be set up individually.

ReefBeat Homepage

The ReefBeat homepage will show you the current status of all of your connected devices, and links you directly to the settings Dashboard for each group, or for individual units.

ReefLED Dashboard - Settings

ReefLED is designed to operate automatically according to a 24-hour D-Program that defines the intensity of the REEF-SPEC color channel during the day, and the moon channel at night. In addition, the D-Program can include random cloud activity (periodic reduction in light intensity) for a specified period of the day.

All of the settings for the ReefLED are viewed/edited from the Dashboard which shows the current settings for the group or for an individual ungrouped unit. Tapping on any of the sections on the dashboard opens the settings page for that feature. Remember to press Apply or Save to implement any changes you make to the settings.

Tapping on the Page menu provides quick access to additional functions such as Manual Control of the unit, Program Library and the Device Manager.

Program library

Any number of D-Programs can be created in the Program Library for each aquarium and copied for use on other aquariums. From the Program library, D-Programs can be created, edited, deleted (except for the Red Sea defaults), previewed or selected to be applied directly as the current D-Program.

Schedule

The Schedule enables you to implement the same D-Program for every day of the week or to select a different D-Program for each day of the week. The default setting is "Daily." Opening the drop-down menu enables you to select any of the D-Programs that are already saved in your Program Library. If you wish to have a different program for different days of the week, choose the "Weekly" option and select a D-Program for each day of the week. The Schedule page includes a direct link to the Program Library so that you can easily view, edit or create new D-Programs.

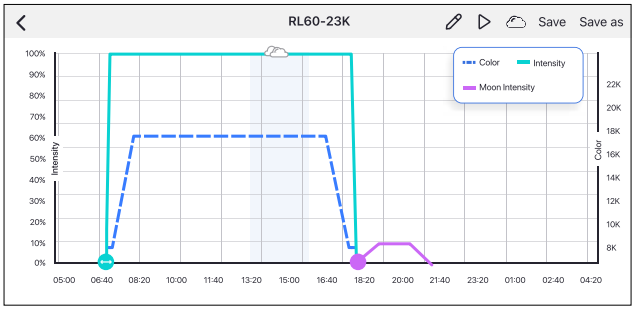
D-Programs

The details of a D-Program are displayed as a graph, showing Kelvin and intensity for all of the time slots over a 24-hour period. Tap on the edit icon to see the details of the time slots.

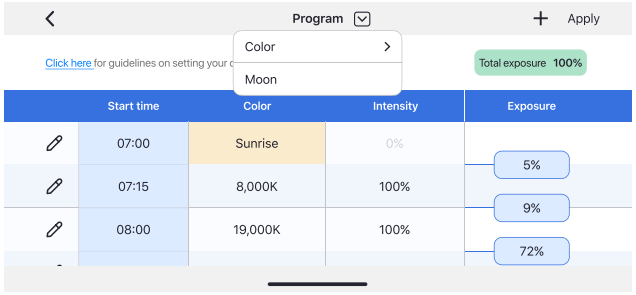
The currently active D-Program is visible on the ReefLED Dashboard. Tapping on it will open the graph and editing options. All other D-Programs can be accessed via the Program Library, available through the 3-dot menu or the Schedule page.

Editing

The Color and Moon intensity lines have start and finish points on the Zero intensity line (which cannot be deleted) and can have a maximum of 15 points in between. You can zoom and pan the page for more precise information.



To modify the settings, tap the edit icon in the page header, which will open the Color program page with a table displaying the time, Kelvin, and intensity for each point. Edit each of the settings to create your desired program, or Add or Delete rows as described below. To switch views and edit the moon settings, tap the corresponding icon in the header, opening a table with time and intensity details.

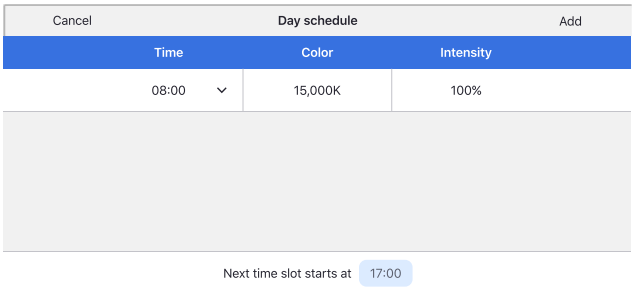


Move

The Sunrise and Moonrise points can be moved by pressing and sliding the point on the graph. Changing the time of the Sunrise shifts the entire D-Program (daylight and moonlight) as a block along the time line. Moving the Moonrise point shifts the moon channel settings as-is along the time line.

Add

To add a point to the program, tap the "Edit" icon to access the program page. Then, tap the "+" icon and edit the details.



Delete

To delete a point, tap the "Edit" icon next to the desired point to open its settings page. Then, select the "Delete" at the top of the page. Some points are without a delete button in the settings page as they cannot be deleted.

Clouds

To set/edit the clouds, tap the "clouds" icon in the graph header. Choose the desired intensity of random clouds:

- No clouds
- Low intensity (dims the light randomly by up to 15% of the set value every 10 minutes for a period of 3 minutes)
- Medium intensity (dims the light randomly by up to 30% of the set value every 10 minutes for a period of 4 minutes)
- High intensity (dims the light randomly by up to 45% of the set value every 10 minutes for a period of 6 minutes)

Drag the start and end times for the cloud activity as desired between the sunrise and sunset of the daylight period.

Preview

At any time during editing, pressing the Preview button will send a preview of the D-Program to the ReefLEDs. The preview will show the effect of the 24-hour program in about 1 minute starting at sunrise and includes the period of darkness. After the preview, the ReefLEDs will return to their scheduled D-Program.

Create

New D-Programs are created by editing an existing one from your Program Library and saving it with a new name. The default Red Sea D-programs can only be saved with a new name. Custom D-Programs can either be saved with new settings after editing, or with a new name while preserving its original settings. Remember to save or save-as when you have finished editing as unsaved changes will be lost.

ReefLED - Additional Effects

Acclimation

Acclimation allows corals to get used to the ReefLED lights by starting at a lower intensity and gradually increasing the intensity every day over the acclimation period.

For systems that have not had LED lighting in the past, we recommend starting at 50% of the intensity set in the D-Program and allowing 50 days to reach the full program intensity. When replacing other LED lights, a shorter period may be possible. However, in such cases we recommend you check your corals daily for signs of stress as there are differences between LED lighting systems.

When setting the acclimation period, the reduced intensity settings will be represented on the D-program graph by a dashed line. This will also be shown in the same format on the Dashboard.

The acclimation period will be implemented automatically on all D-Programs that are part of your schedule.

Lunar Cycle

Activating the Lunar Cycle implements a 28-day moon phase cycle based on the settings for the moon channel in the D-Program. This is instead of having the same moon-light effect every day. Editing the Lunar Cycle setting enables you to make the full moon on a particular day of the week, when you know you will be home to enjoy it.

When setting the Lunar Cycle, the reduced intensity settings will be represented on the D-program graph by a dashed line for the Moon channel. This will also be shown in the same format on the Dashboard.

The Lunar Cycle will be implemented automatically on all D-Programs that are part of your schedule.

Staggered Sunrise

The staggered sunrise feature allows you to create an enhanced sunrise/sunset effect along the length of an aquarium for ReefLEDs that are grouped together. Set a "delay time" of a few minutes and the current D-Program will be implemented on each ReefLED in turn, after the delay time you specify.

The delay will be implemented according to the order that the ReefLEDs appear in the Device Manager.

By default, the ReefLEDs are ordered according to the order in which they were added to the aquarium.

- A new ReefLED will always be added at the bottom of the list. However, the order of ReefLEDs can be changed at any time using the "Move" function: ***Device Manager > Device Line menu > Move.***

  Using the Move function, you can easily change the staggered sunrise from starting on the right side of the aquarium to starting on the left.

  The "Identify" function will make the individual ReefLED blink a few times so that you can easily identify each ReefLED when setting their order for the staggered sunrise effect:

- ***Device Manager > Device Line menu > Identify.***

Connectivity Modes

For full functionality Red Sea's connected devices must be permanently connected to the Internet and the aquarium set as "Online".

In the event that you do not have an available Wi-Fi network or your network does not have a permanent internet connection set your aquarium as "Offline". You can change this setting later if Internet availability status changes. Note that your smartphone must be online for this change to be registered on the ReefBeat cloud.

In both Online and Offline modes, the ReefLEDs will provide exactly the same performance. The differences are related to the interaction with the units, ease of set up and making changes- specifically when multiple ReefLEDs or other Red Sea connected devices are in use on the same aquarium.

Online (Internet) mode – full functionality

With a permanent connection to the internet, your ReefLED will have full functionality and all ReefBeat cloud related services. This includes real time status of your ReefLEDs in the ReefBeat homepage and notifications if communication with one or more units has been lost or is malfunctioning.

Offline Local Network mode – partial functionality

ReefLEDs are connected to a home network without a permanent internet connection, and aquarium is set as Offline.

In Offline mode, your smartphone will need to be connected to the same network as your Red Sea connected devices to communicate with them. When connected to the same network, you will see the real time status on the homepage and have full functionality for grouped devices except for Notifications and Firmware updates, which cannot be done offline.

When your smartphone is not connected to the same network, no current data about the device will be shown in the ReefBeat homepage. You can change the settings from Offline to Online from "My Aquariums" in the homepage main menu.

Offline Direct mode – Limited functionality

If your ReefLED is not connected to a network, you will need to connect to its access point directly from your smartphone every time you wish to access it. When connected to the ReefLED in Direct mode, you will not have any functionality that relates to groups of devices such as Staggered Sunrise. Copies of the same D-Program can be used for multiple ungrouped units. However, this and all other settings will have to be implemented one unit at a time.

When your smartphone is not connected to the ReefLED, no current data about the device will be shown in the ReefBeat homepage. Notifications and firmware updates are not available for offline units.

When operating in direct mode, you can decide if you want to leave the ReefLED AP active all the time or turn it on/off with the Settings button for access as needed.

- At any point in time you can connect a Direct mode unit to a Home Network: *Device Manager > Device Line menu > About > Connect.*

Operation

The ReefLED will run automatically according to the set schedule of D-Programs.

Grouped ReefLEDs all work together as a single luminaire and is the preferred mode of operation.

To enjoy all of the functionality that the ReefBeat system has to offer, the ReefLEDs should be connected to the internet at all times.

With an active internet connection, the ReefBeat homepage will show all of the current settings of the ReefLED group or for each ungrouped unit individually.

Manual Operation

To temporarily override the automatic schedule, select "Manual" from theReefLED settings page.

Manual provides direct control over the two lighting channels: Color and Moon, and overrides the current D-Program while the manual page is open. To maintain a manual setting for up to two hours, set the manual “Run Time” to the desired time. The ReefLEDs will automatically return to the current D-Program when the Run Time expires. Leaving the manual page without setting a run time will also revert the ReefLEDs to the schedule.

Manual settings can be saved and will be automatically added to the manual library for future use.

Manual Library

ReefLED G2 features a Manual Library for saving custom configurations of the color and moon channels together with a run time for instant implementation. One custom configuration from the manual library can be designated as "Photo Mode" a pre-set lighting option for photography, that is accessible directly from the Homepage ReefLED G2 card.

Device Manager

The Device Manager is accessible from the Page menu in both the ReefBeat homepage and the ReefLED Dashboard, and contains a list of all of the Red Sea connected devices that are installed on each aquarium. The devices are listed according to type and in the order in which they were added to the aquarium. Tapping the device line menu for each device opens a list of advanced settings/functions for each ReefLED individually.

Group / Ungroup status

The grouped/ungrouped status of each ReefLED is shown in the Device Manager.

Multiple ReefLED units that are connected to the same home network can either be operated together as a group or as individual units. The first ReefLED connected to the home network will automatically belong to the LED group for that aquarium. Subsequent units will be added to the group and receive the same settings. An individual LED can be ungrouped or re-grouped at any time. When a unit is ungrouped, it will maintain the same settings it had when it was grouped until changes are made. Once added to a group, the previously ungrouped LED will automatically get the settings of the group.

To change the status: *Device Manager > Device Line menu > Group/Ungroup*

Turn OFF / Turn ON

One or all ReefLEDs can temporarily be turned off/on without physically unplugging the device.

For individual units: *Device manager > Device line menu > Turn OFF / ON*.

For all ReefLEDs: *Device manager > Group line menu > Turn OFF / ON*.

Firmware Updates

From time to time you may receive a notification that a new firmware version is available for your ReefLED. It is important to keep your ReefLED firmware updated to ensure compatibility with updates to the ReefBeat app.

If your ReefLED is not permanently connected to the internet, you will need to connect it temporarily in order to update the firmware.

To update all ReefLEDs simultaneously: *Device manager > Group line menu > Firmware Update*.

Individual ReefLEDs can be updated: *Device manager > Device line menu > Firmware Update*.

Do not unplug the ReefLED while it is downloading and installing the new software.

Device Manager > Device Line menu > About – will show the currently installed firmware version.

When the firmware update is complete, the "About" page will show the new version as the current version together with the date and time that the update was performed.

All of your previous settings will remain as before.

If the firmware update is not successful, the ReefLED will automatically revert to the previous version. Repeat the process a few minutes later.

If your ReefLED does not seem to be performing correctly after the update, disconnect and reconnect the power by the DC jack and wait for the ReefLED to restart.

Removing a ReefLED - Temporary

When switching off or physically removing a ReefLED temporarily such as when doing reef-scaping or other maintenance on the aquarium, set the unit to "Out-of-service" through the Device Manager to prevent ReefBeat from giving you notifications that communication with the unit has been lost.

When returning the unit and/or switching it back on, remember to return its status to "In-service". To change the status: *Device Manager > Device Line menu > In-service / Out-of-service.*

Removing a ReefLED - Permanent

When permanently removing a ReefLED from an aquarium or before resetting the unit's memory, delete the unit from the ReefBeat app:

Device Manager > Device Line menu > Delete.

Deleting before it is unplugged will prevent unnecessary notifications that communication with the unit has been lost.

Rebooting a ReefLED

In some cases, such as when the ReefLED disconnects from the ReefBeat Cloud, it will be necessary to restart the device. This can be done in 2 ways.

Click the Reboot button from the device manager: *Device Manager > Device Line menu > Reboot*.

Alternately, you can disconnect and reconnect the power by the DC jack and wait for the ReefLED to reboot.

Clear ReefLED settings (Hard Reset)

To permanently remove all user settings from the memory of the ReefLED and return it to its initial default state, perform the following steps.

If the ReefLED is connected to ReefBeat the factory reset can be activated from the App: *Device Manager > Device Line menu > Hard Reset*.

If the ReefLED is not connected to ReefBeat perform the following steps:

Permanently remove (Delete) the specific ReefLED from ReefBeat.

Press the Settings button for about 15 seconds (until the indicator LED shows a double blink), release the button and wait for about 5 seconds until a second double blink of the indicator LED appears.

Disconnect and reconnect the power by the DC jack and wait for the ReefLED to restart.

The unit will restart without any user settings and with the Wi-Fi switched off, exactly as shipped from the factory. The unit will retain the latest installed version of the firmware.

Overtemperature protection

The ReefLED is designed with active cooling to ensure the longevity of the LED array.

Fan speed will vary according to the light intensity. At very low intensity levels such as with moonlight the fan is not required. At full LED intensity and with an ambient temperature of about 25°C/ 77°F the fan will run at about 85% capacity. In high ambient temperature environments, the fan speed will increase to 100% to maintain the correct working temperature for the LED array.

If the ambient temperature is too high or airflow to the unit is restricted the unit will automatically dim the intensity of the LEDs or shut it down completely to prevent damage to the unit. In the event of shutdown due to overtemperature you will need to disconnect and reconnect the power by the DC jack to restart. Check the unit and surroundings for the cause of the overtemperature situation.

Notifications

When the ReefLED has a permanent connection to the internet, a notification will be sent to your smartphone whenever connection to the unit is lost.

A “No Connectivity” message could be due to a power or internet outage, router failure or a fault with a specific connected device.

If you have more than one Red Sea connected device and connection to one or more (but not all) devices are lost, you will receive a “Partial connectivity” message. You will then be able to see the current status of all devices from the Device Manager.

You can set how you wish to receive some of the messages from “Notifications” in the homepage main menu.

Maintenance

For continued smooth running of the ReefLED, we recommended making sure that it is clean, dry and free of any buildup of salt deposits on a regular basis.

Before doing any maintenance, disconnect the unit, allow the lens to cool down and allow it to dry completely before reconnecting.

Remove the top cover and wipe it ,as well as the heat sink and fan with a damp cloth.

If the lens becomes contaminated with water, dust, or other particles, clean with isopropyl alcohol.

The unit is not waterproof. Do not submerge in water or other solutions.

Apart from the cooling fan, there are no user serviceable parts inside the unit.

Fan replacement

In the event that the fan makes an unusual mechanical noise or stops working, try removing dust or salt deposits by cleaning as described above. If this does not help, the fan will need to be replaced. Disassemble and reassemble the fan as shown. Care should be taken not to touch the surface of the LED array.

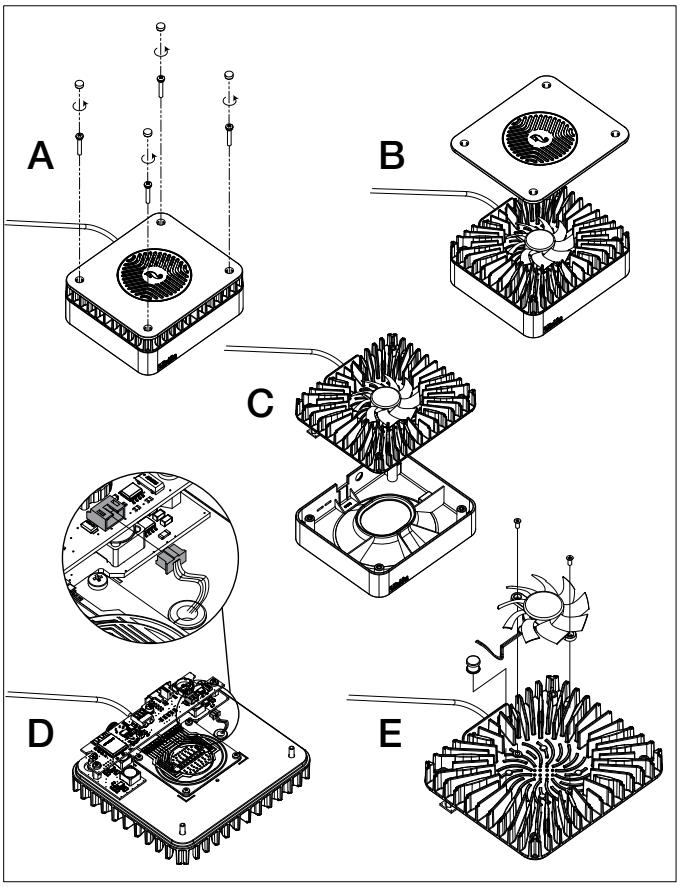
Battery replacement

The ReefLED has a back-up battery to maintain power when the unit is disconnected from the power supply. This battery will need to be replaced once every few years. To replace the battery, open the unit as shown. Replace with a 3V Lithium cell Battery CR1220.

After reassembling the unit and switching it on, the internal time may need to be reset.

Open Device Manager > Device Line menu > About.

Online devices will have the time updated automatically when Internet connection is restored. Offline devices will need to have the time reset manually. Tapping on the displayed time will open a time setting window. Press "Reset" to change the time.



Troubleshooting

A full and up to date FAQ for the ReefLED and the ReefBeat app is available in the app (*Homepage Main Menu > Help > FAQ*) and on our website.

Q. I am having trouble installing the ReefBeat app or it crashes or does not seem to be working as described in the manual.

A. Check that your specific smartphone is on the list of supported devices on our website.

Q. My smartphone is on the list of supported devices but keeps crashing.

A. Uninstall and reinstall the app and sign in again with your username and password. If this does not help, contact customer support.

Q. I've plugged in a new unit and the light is not coming on.

A. The ReefLED will only work after it has been connected to the ReefBeat app.

Q. I'm having difficulty connecting the ReefLED to my home network.

A. Check that the ReefLED Wi-Fi is working correctly by using the "Offline Direct Mode" option. If it does, try connecting to the hot-spot of a mobile phone in the same room: *Device Manager > Device Line menu > About > Connect.*

If neither of these options work, contact customer support. If they do work, the problem is likely with the router signal strength or its configuration, or it may be overloaded with devices.

- Check that the signal strength of your router is sufficient for a stable connection exactly where the ReefLED is located. You may need to install a suitable Wi-Fi extender closer to the aquarium.
- The router may have too many devices already connected to it.
- Your router may be configured not to allow devices like the ReefLED to be connected. This situation is common in an office environment- contact your IT professional.

Q. I keep getting notifications that my ReefLEDs are not connected.

A. If your network router is not permanently connected to the internet, set your Aquarium as "Offline" *My Aquariums > Device Line Menu > Offline.* If your network router is meant to be permanently connected, check the quality of the Wi-Fi connection between the units and your router or the stability of your internet connection.

Q. There is a small difference between the LED intensities shown on the ReefBeat homepage and the current intensities shown on the ReefLED Dashboard.

A. The homepage updates once per minute with the values as reported by the unit. The Dashboard shows the calculated values according to the D-program and effects. A discrepancy of a few percent between the two readings is normal, especially during periods where the values are constantly changing such as during sunrise and sunset.

Q. Sometimes there is a constantly varying difference between the LED intensities shown on the ReefBeat homepage and the current intensities shown on the ReefLED Dashboard.

A. You are likely seeing the effect of the random clouds. The homepage updates once per minute with the values as reported by the unit. The Dashboard page shows the calculated values according to the D-program. However, it does not take into account the effect of the random clouds which are implemented on each ReefLED individually. If you cancel the clouds, the differences should disappear.

Q. According to the current D-Program, the LEDs should be working but no light is on.

A. Go through the following diagnostic check list one stage at a time:

1. Check that the ReefLED power indicator LED is on. If Ok, go to #2. If it is not on, check that the power supply indicator light is on. If Ok, go to #2. If it is not on, check that the power outlet has power and the AC cable is properly connected. If it is connected, the power supply will need to be replaced.

2. Check that the ReefLED is connected to your ReefBeat app by tapping the "Identify" function: ***Device Manager > Device Line Menu > Identify***. The ReefLED should blink a few times. If it does, go to #3. If it does not, disconnect and reconnect the power by the DC jack to restart. If it still doesn't blink, try reconnecting the ReefLED to ReefBeat. If this did not help, go through the "Hard Reset" steps (see page 18) and reconnect. If still not working contact customer support.

3. Check that both color & moon channels are working: ***ReefLED Dashboard > Page Menu > Manual.*** If they are, go to #4. If they aren't, disconnect and reconnect the power by the DC jack to restart. If still not working, try reconnecting the ReefLED to ReefBeat. If this did not help, go through the "Hard Reset" steps (see page 18) and reconnect. If still not working contact customer support.

4. Check that the aquarium is set up for the correct time zone: ***Homepage > Main Menu > Aquariums > Aquarium 3 dots menu > Edit Aquarium > Aquarium Time Zone***. If OK, go to #5. If not, set the correct time zone.

5. Check that the current time on the ReefLED is correct: ***Device Manager > Device Line Menu > About > Current Time.*** If OK, go to #6. If not, reset time then disconnect and reconnect the power by the DC jack to restart the unit. Check the time again and if it is still not correct, try replacing the battery.

6. If the current time was correct, disconnect and reconnect the power by the DC jack to restart. If it was not correct, try reconnecting the ReefLED to ReefBeat. If this did not help, go through the "Hard Reset" steps (see page 18) and reconnect. If still not working, contact customer support.

Q. My lights do not go on and off together.

A. Check that you have not activated the Staggered Sunrise function which sets a delay between the ReefLED units by a few minutes.

- Check that the units are grouped. If they are ungrouped, check that they all have the same D-program/schedule.
- Check that all units have the correct time: ***Device Manager > Device Line Menu > About > Current Time.***

Q. I've activated the Staggered Sunrise option but the lights do not work in the correct order.

A. See "Staggered Sunrise" in the manual to set the lights in the correct order.

Q. One of the color channels does not seem to be working properly.

A. Go to Manual control: ***ReefLED Dashboard > Page Menu > Manual.*** Test each channel individually and if one or more do not work, disconnect and reconnect the power by the DC jack to restart. Recheck the channels using the Manual control. If this did not help, go through the "Hard Reset" steps (see page 18) and reconnect. If still not working, contact customer support.

Q. Everything seems to be working correctly when i am home but I am not getting any information when i am away from home.

A. Your aquarium is set to Offline mode. Change your aquarium setting to Online: *Homepage > Main Menu > My Aquariums > aquarium 3 dots menu > Edit Aquarium > Online*

Warranty

Red Sea Aquarium Products Limited Warranty.

The limited warranty sets forth all of **Red Sea Aquatics Ltd (Red Sea)** responsibilities regarding this product. There are no other express or implied warranties from Red Sea.

Red Sea warrants your product against defects in materials and workmanship for a period of 24 months, valid from the date of original purchase and will repair this product free of charge (not including shipping costs) with new/rebuilt parts. Damage to the fan is not included. The precondition for the warranty is that the stipulated set-up routine is observed. In the event that a problem develops with this product during or after the warranty period, contact your local dealer or Red Sea (at the company address indicated) for details of your nearest authorized service center.

The warranty is extended only to the original purchaser. Proof of date of purchase will be required before warranty performance is rendered. This warranty only covers failures due to defects in materials or workmanship which occur during normal use. It does not cover damage which occurs during shipment or failures which result from misuse, abuse, neglect, improper installation, operation, mishandling, misapplication, alteration, modification or service by anyone other than an authorized Red Sea service center. Red Sea shall not be liable for incidental or consequential damages resulting from the use of this product, or arising out of any breach of this warranty. All express and implied warranties, including the warranties of saleability and fitness for particular purpose, are limited to the applicable warranty period set forth above.

These statements do not affect the statutory rights of the consumer.

USA

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusion or limitations may not apply.

FCC Compliance Statement:

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation. Any changes or modifications not expressly approved by Red Sea could void the user's authority to operate the RF Module and/or the product that incorporates the RF Module. The user is cautioned to maintain a 20 cm (8 inch) spacing from the product to ensure compliance with FCC regulations.

CE Declaration of Conformity:

The equipment complies with the RF Exposure Requirement 1999/5/EEC, Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0-300 GHz). This equipment meets the following conformance standards: EN 300 328, EN 301 489-17.