



PSK DC-1200 Pump & Skim-Sensor

User Manual

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PSK DC-1200 Pump & Skim-Sensor

Smart – Efficient – Self-leveling

User Manual

 **Red Sea**

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Introduction

Congratulations on your purchase of Red Sea's REEFER DC Skimmer / Upgrade pack.

The smart ReefRun DC-Skimmer incorporates the variable intensity Sicce PSK DC-1200 skimmer pump together with Red Sea's bespoke dual-action skim-sensor, that provides a unique self-leveling functionality to prevent over-skimming and collection cup overflow.

This manual covers the installation and operation of the PSK DC-1200 pump and self-leveling sensor for the Reef Skimmers 300-600-900, and is in addition to the REEFER Skimmer manual.

The PSK DC-1200 skimmer pump and self-levelling sensor can only be used when connected to a ReefRun Dual controller that provides control of up to 2 ReefRun compatible DC return pumps, DC skimmer or a combination of both. Read the manual provided with the ReefRun Dual controller for full installation and operation instructions for the controller.

The ReefRun Dual Controller is part of Red Sea's suite of smart devices that are operated via Wi-Fi by Red Sea's ReefBeat® App, which needs to be installed on a smart mobile device with internet connectivity.

Welcome to Red Sea's smart reef-keeping.

The Red Sea Team

Safety

PLEASE READ AND FOLLOW ALL SAFETY INSTRUCTIONS

THIS DEVICE IS INTENDED FOR INDOOR USE ONLY.

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.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory, or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

The appliance is only to be used with the power supply unit provided with the appliance. 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 is securely installed before operating it.

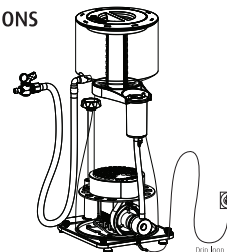
Read and observe all the important notices on the appliance.

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.

Do not use if cord is damaged. In case of need, do not attempt to replace or repair yourself; return the appliance to an authorized service facility for service or discard the appliance.

In case of need, do not attempt to replace yourself; return the appliance to an authorized service facility for service or discard the appliance.

SAVE THESE INSTRUCTIONS



Introduction to the self-leveling functionality of the REEFER DC Skimmers

Protein skimmers perform 2 important functions. The primary function is to mechanically remove dissolved organic matter (proteins / bacteria) from the aquarium water. The secondary, but not less important function is to oxygenate the water through vigorous mixing of the water with a continual supply of fresh air. Both functions are responsible for maintaining water quality which can be monitored by measuring the REDOX or ORP of the water.

Skimmers remove proteins from the water as they stick to the surface of air bubbles that ascend the neck of the skimmer as a foam, and thereafter settle in the collection cup as a liquid. The reaction chamber of the REEFER Skimmers was designed together with the range of PSK pumps to provide the necessary flow rates of air and water in an optimal ratio and contact time to optimize the protein removal for different aquarium volumes. The wetness of the foam in the skimmer neck is determined by adjusting the mechanical regulator of the skimmer that restricts the water outlet of the reaction chamber.

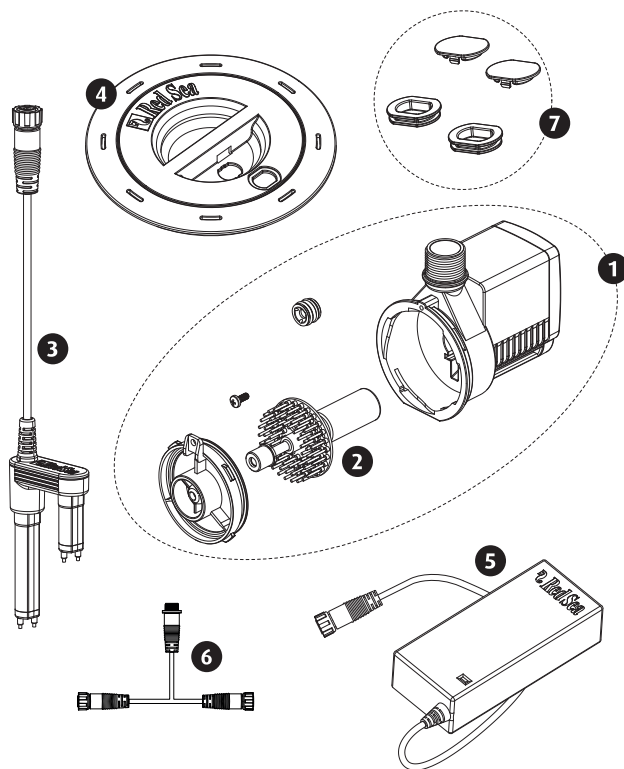
Any change in water chemistry, in particular changes that can affect the surface tension of the water will affect the delicate balance that enables a stable foam production. Some chemicals can prevent foam from forming while others can cause the air/water mixture to expand causing an extremely wet foam to suddenly rise inside the skimmer neck and flood the collection cup with clean seawater. This phenomenon, known as over-skimming, typically occurs in a reef aquarium after feeding, adding new livestock, reef-scaping, equipment maintenance, water changes or changes in the waterborne bacteria population.

The self-leveling functionality of the Reefer DC-Skimmers combines the variable intensity of the PSK DC-1200 skimmer pump with a dual input sensor that monitors both the wetness of the foam in the skimmer neck and the liquid level in the collection chamber of the cup, to optimize the performance of the skimmers.

When the self-leveling function is enabled and wetter than normal foam is detected in the skimmer neck, the intensity of the PSK-DC skimmer pump is immediately reduced to prevent over-skimming and then incrementally increased back to the set intensity maintaining the maximum possible aeration without allowing over-skimming.

If a full cup situation is detected, the intensity of the PSK-DC skimmer pump is reduced to maintain efficient oxygenation of the water inside the skimmer reaction chamber, without pushing new waste to the cup, until it is emptied and regular operation can be restored.

DC-Skimmer Components



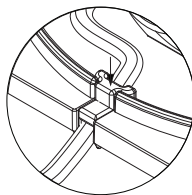
No.	Name	Part #
1	PSK DC-1200 complete	R35570
2	PSK DC-1200 Impellor	R50541-H50
3	Skim Sensor	R35578
4	LID RSK 300	R35579
	LID RSK 600	R35580
	LID RSK 900	R35581
5	PSU	R35575
6	Controller Cable	R35563
7	RSK LID Grommets/Plugs	R35585

Installing the PSK DC-1200 Skimmer pump and Skim-sensor

Full instructions for installing the REEFER Skimmer are provided in the REEFER Skimmer instruction manual.

The **PSK DC-1200 skimmer pump** is an exact drop-in replacement for the PSK AC pumps. Follow the instructions in the REEFER Skimmer manual to install the pump.

Skimmer pumps need to be cleaned on a regular basis to remove calcium carbonate and other deposits and therefore it is recommended to familiarize yourself with the pump by disassembling/reassembling it before installing it for the first time in the skimmer. If you are replacing an existing AC pump, remember to return the cable restraint back into position.



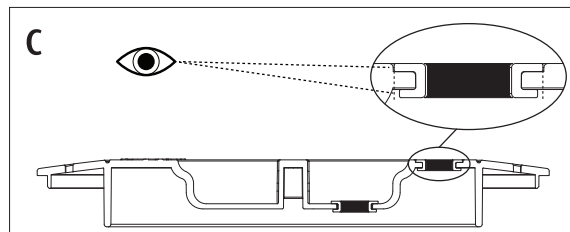
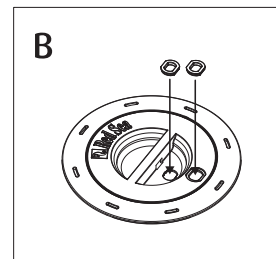
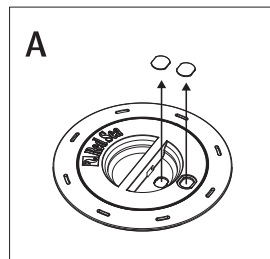
Select a suitable location for the connector between the pump and control cable to allow easy access when removing the pump for maintenance.

Connect the control cable to the pump and power supply and thread the controller part of the cable to the ReefRun Dual controller (RRDC).

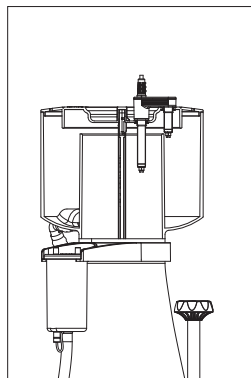
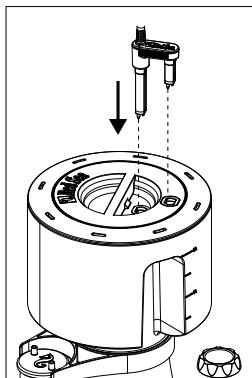
The pump will not work until the RRDC has been onboarded to the ReefBeat App and the pump has been setup.

Prepare the **DC skimmer lid** for use with the **Skim-sensor** by removing the plastic plugs and inserting the black rubber grommets in the sensor mounting holes. (Note; the wider flange of the grommets should be on the upper surface of the lid.) The grommets are essential for holding the sensor securely in position so ensure that they are in place.

If you have the upgrade kit you will need to replace the original lid with a DC-Skimmer lid and transfer the neck wiper to the new lid.

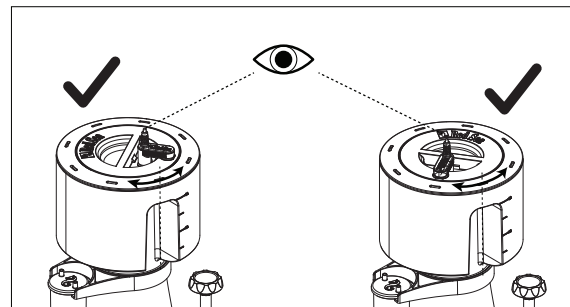
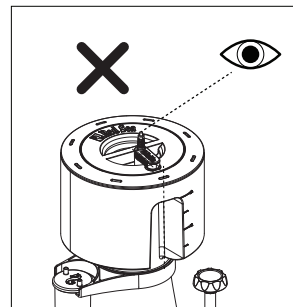


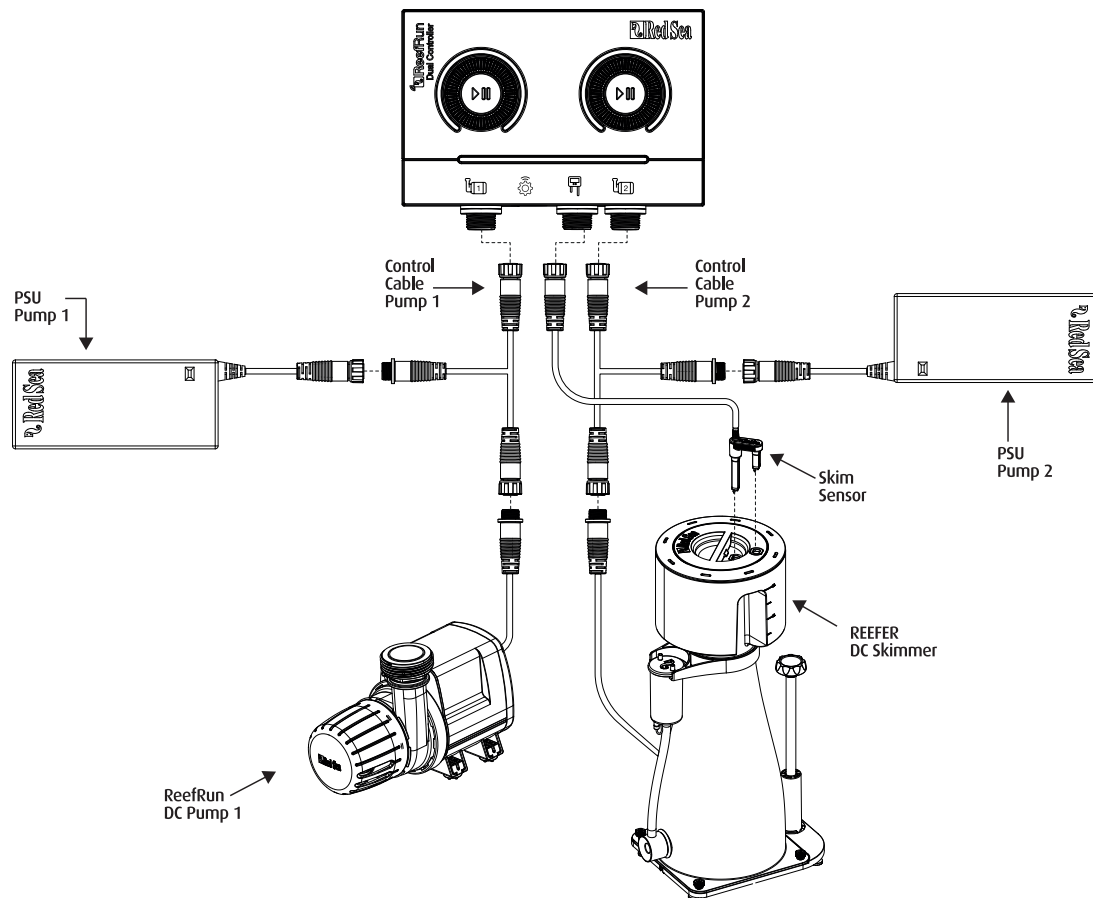
When the skimmer is assembled, insert the Skim-sensor into the mounting holes located in the DC skimmer lid. The long probe is the neck sensor and should be inserted in the hole in the inner recessed part of the lid. The short probe is the cup sensor and should be inserted in the hole in the upper surface of the lid.



Thread the sensor cable as required to reach the RRDC but leave about 50cm / 20" of loose cable near the skimmer for ease of maintenance.

To avoid false full-cup alerts, orient the lid so that the cup sensor is not directly above the foam view window of the collection chamber.





Connecting to the ReefRun Dual Controller (RRDC)

Full instructions for connecting the ReefRun Dual controller to the ReefBeat App are provided in the RRDC manual.

Setting up the PSK-DC 1200 on the ReefBeat App

The RRDC will identify that you have connected the PSK DC-1200 pump, however, you will need to select your REEFER Skimmer model (RSK300/600/900) to implement the correct default pump intensity settings, as they all use the same pump. The default pump intensity for each model has been set to provide the optimal airflow and air/water contact time. This setting considers the size of the reaction chamber and performance of the venturi. You can manually adjust the flow intensity at any time however we recommend that you use the default intensities.

The default setting is for a continuous operation of the skimmer (Always ON) at the pump intensity shown in the settings page of the App. The skimmer can be set to be OFF with the intensity setting saved to be reinstated when turned back ON. Alternatively, the skimmer can be set to “Self-leveling” which will automatically regulate the intensity if either over-skimming or full-cup conditions are reached. The RRDC will identify if you have connected the skim sensor, which needs to be connected before the ReefBeat App will enable the setting option for the self-leveling features. Remember to press the save button at the top of the screen after making any changes to the settings.

Skimmer model	RSK 300	RSK 600	RSK 900
Default Pump Intensity	70%	80%	100%
Air flow rate l/hr	480	720	900
Power (W)	20	25	30
Full-cup pump Intensity	25%	30%	35%
Full-cup Air flow rate l/hr	300	360	400

DC-Skimmer Self-leveling

The Self-leveling feature of the ReefRun controller automatically regulates the flow intensity of the DC skimmer pump based on the dual action skim sensor located in the neck and collection chamber of the collection cup. Before using the self-leveling features, the skimmer should be set up as fully explained in the REEFER Skimmer instruction manual by using the mechanical flow regulator to adjust its performance.

Each of the self-leveling sensors can be activated / deactivated by toggling each one individually in the App.

Over-skim regulation

The sensor in the neck monitors the wetness of the foam and will activate a self-leveling procedure whenever a potential over-skimming wetness is identified. When the wetness of the foam in the neck exceeds the “over-skim” threshold the intensity of the pump is immediately reduced to prevent over-skimming and then gradually increased and/or decreased, a bit at a time, according to the foam wetness, until the preset pump intensity is reached and stable skimming is restored.

To optimize performance of the feature the over-skim threshold is adjustable from the App.

Lower the threshold if over-skimming is not prevented. Raise the threshold if the skimmer is often in self-leveling mode and little or no skimmate is being collected. *Homepage>Settings Page>Pump>More Settings>Over-Skim Regulation*

At any time during the automated self-leveling process the skimmer can be returned to normal skimming by pressing the resume button in the App or the pause/play button on the controller.

Full-Cup regulation

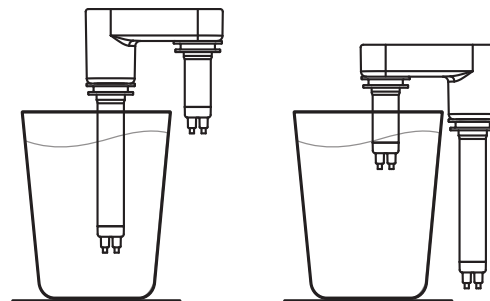
The sensor in the collection chamber identifies when the cup is full and needs emptying. When a full-cup is first registered the pump intensity will be reduced to allow for continued aeration of the water. Once a full-cup has been identified the system keeps monitoring the status and will automatically revert to normal operation if it is not full to the maximum capacity. Once maximum capacity has been reached the cup needs to be emptied and then normal skimming restored from the App.

In the event that the over-skim threshold is passed while the skimmer is in full-cup, the skimmer pump will be switched off until the cup is emptied and normal skimming is restored from the App.

Skim-Sensor calibration

When selecting the Self-leveling setting for the first time the App will guide you step by step through the skim sensor calibration procedure. Each probe of the sensor needs to be calibrated individually and should be immersed, one at a time, in a cup of water taken from the sump. Immersing both probes at the same time or immersing the probe directly in the sump (instead of in a cup) will give an incorrect result that will affect the performance of the self levelling feature.

Skim sensor calibration will need to be repeated after a factory reset of the RRDC or if the skim sensor is replaced.



Operating the REEFER DC Skimmer

The REEFER Skimmers have a precision geared skim regulator for a very fine control of the foam point ensuring high skimming efficiency. Rotating the regulator in the “Minus” direction lowers the foaming point in the neck to produce a drier foam. Rotating in the “Plus” direction raises the foaming point to produce a wetter foam.

Adjust the skim regulator so that the water level in the skimmer body is approximately at the base of the neck. If the foam is too dry or it starts to accumulate lower in the neck, gradually rotate the Skim Regulator in the “Plus” direction until the desired foam consistency is achieved. Alternatively, if the foam is too wet, gradually rotate the Skim Regulator in the “Minus” direction.

NOTE: Correct setting of the regulator is essential for the proper operation of the skimmer. The self-leveling will only prevent over-skimming events when the regulator is set correctly.

Do not activate the over-skin protection on new skimmers or new set-ups until the skimming is stable and regulated.

New set-ups typically have a negligible amount of organic matter in the water and therefore it may take some time for a skimmate to be produced.

New skimmers sometimes need a short break-in period of a few days before they begin to function efficiently. Over-skimming is common while harmless chemical residues that affect the surface tension of the water are neutralized. Using the self-leveling feature during the break-in period may not be effective and should be disabled. In case of over-

skimming rotate the regulator fully in the Minus direction and allow the over-skimming to naturally reduce in intensity.

If the break-in does not end after a week, disassemble the skimmer, and wash it in a slightly acidic solution. Rinse well in freshwater before returning it to the sump.

Feeding and Supplementing

Skimmers are very susceptible to the effect of surface-active compounds such as foods and supplements that are added regularly to the aquarium. Such materials can significantly affect the foam production and in some cases cause over-skimming.

Use the custom schedule or connect the skimmer to the Feed or Maintenance Quick actions of ReefBeat to switch the skimmer off immediately before adding such materials and leave off for however long it takes until the skimmer can be returned to its normal foaming action. After switching the skimmer back on the self-leveling feature will take care of any residual materials by automatically reducing the pump intensity until the set intensity can be restored.

Maintenance

Collection Cup

Monitor the amount of skimmate that accumulates in the collection cup and drain the cup on a regular basis. Skimmer performance will benefit from using the neck cleaner on a daily basis and will enable you to only remove and wash the cup and wiper every 7 – 10 days. If you wash the cup with detergent make sure to rinse it thoroughly before returning it to the skimmer.

Skim-sensor

It is recommended to rinse the probes of the skim-sensor about once a week to remove any build-up of organic matter. Rinse by immersing and swirling the probes for a few seconds in the sump will be sufficient to keep the probes working well. It is best to do this when the skimmer is off otherwise rinsing the sensor will cause the skimmer to go into self-leveling mode and will require pressing the resume button to restore normal skimming immediately.

If a more intense cleaning is done such as using a mild acid or abrasive pads to remove deposits the sensor should be recalibrated before returning to normal use.

Skimmer Pump & Impeller

Over time mineral and organic deposits will form inside the pump affecting its performance and longevity. For best results it is recommended to remove the pump from the skimmer once a month for cleaning.

Open the pump impeller chamber, pull out the impeller and rinse all parts under the tap.

If you see any buildup of scale on the inside of the pump housing or on the impeller magnet, use hot water or vinegar/scale remover to dissolve it. Make sure that you rinse off all residues of any cleaning materials before reassembling the pump.

Warranty

Red Sea Products Limited Warranty.

Thank you for purchasing a Red Sea REEFER DC-Skimmer upgrade kit (hereinafter “the Product”).

Red Sea Aquatics (UK) Ltd. (hereinafter “Red Sea”) warrants the Product against manufacturer’s defects in material and workmanship for 2 years from your date of purchase.

Pump impellers are a wear item and as such Red Sea warrants the impellers against manufacturer’s defects in material and workmanship for 6 months from your date of purchase.

The warranty provided by Red Sea is NOT TRANSFERABLE AND IS LIMITED TO THE ORIGINAL PURCHASER. If the Product is eligible under this warranty, Red Sea will either repair the Product free of charge (not including shipping costs) with new or refurbished parts or replace the Product with a new or refurbished Product at Red Sea’s sole discretion.

This warranty DOES NOT COVER normal wear and tear. It also DOES NOT COVER damage which occurs in shipment and/or failures or defects resulting from use outside the normal, and/or natural disasters, accidents, power line surges, neglect, improper installation, operation or maintenance, servicing of the Product conducted by anyone other than an authorized Red Sea service center, or failure to use or assemble the Product in accordance with any instructions provided (in the Product manual or otherwise) or the technical and/or safety standards of the country in which the Product is used. Additionally, any modification of the Product other than by an authorized Red Sea service center will invalidate this warranty.

In order to affect this warranty, please contact your local service center. For your convenience, details of authorized service centers can be found on Red Sea’s website. Proof of purchase will be required before warranty performance is rendered.

The sole and exclusive remedy against Red Sea shall be for the repair or replacement of the Product as provided above. NO OTHER REMEDY (including but not limited to, incidental or consequential damages for lost profits, lost sales, or any other incidental or consequential loss) shall be available. Some jurisdictions do not allow the exclusion of incidental or consequential damage, so the above limitation may not apply to you. To the full extent allowed by applicable law, in no event shall Red Sea be liable for any loss or damage to aquatic life, and/or damage to other property and/or individuals resulting from the use of the Product or arising out of any breach of this warranty. All implied warranties are excluded to the full extent allowed by applicable law, and to the extent that they may not be excluded, are limited to the applicable warranty period set forth above. Some jurisdictions do not allow limitations on how long an implied warranty or condition lasts, so this limitation may not apply to you. The express warranties made in this warranty are exclusive and may not be altered, enlarged, or changed by any distributor, dealer, or other person, whatsoever.

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.

European Union – Disposal Information:

This symbol means that, according to local laws and regulations, your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

CE Declaration of Conformity:

The equipment complies with the RF Exposure Requirement 2014/53/EU, 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.



DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary. This product must not be disposed together with the domestic waste. This product must be disposed at an authorized place for recycling of electrical and electronic appliances. By collecting and recycling waste, you help save natural resources, and make sure the product is disposed in an environmentally friendly and healthy way.

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