GSM | Mercury

by OCEANREEF®
underwater, naturally.

INSTRUCTION MANUAL

AMRON
INTERNATIONAL
EVERYTHING UNDER PRESSURE™

MERCURY COMMUNICATION UNIT OWNER'S MANUAL

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Introduction

GSM Mercury communication unit is the latest in OCEANREEF range of products. The frequencies it uses are compatible with other communication systems on the market.
The high quality of the product does not allow the user to ignore the problems connected with the correct use of the product and the rules for safe diving.

General Precautions and Warnings

Use of SCUBA equipment by uncertified or untrained persons is dangerous and can result in serious injury or death.

NEVER wash any part of the communication with anything else than fresh water and the compartments opened/unscrewed.

DO NOT apply any type of aerosol spray on the GSM Mercury communication unit. Doing so may cause permanent damage to certain components.

Continue to breathe while surfacing from a dive even if you are listening to the communications unit. Lung expansion injuries may result if you ascend while holding your breath. **DO NOT STOP BREATHING WHILE SURFACING FROM A DIVE.**

Speaking can result in higher air consumption. Check your air supply periodically when communicating as this may affect your normal air consumption. **ALWAYS MONITOR YOUR PRESSURE GAUGE.**
Before attempting to use this device in open water you must practice using the unit in confined water (such as a pool).

Product Specs

Mercury, the new ultrasonic communication unit is made to work only in combination with the SPACE EXTENDER FRAME.

The main features are:

- two speakers with volume adjustment
- new PTT/MIC assembly for a more ergonomic use
- two channels
- D.A.T. mode (handsfree mode)
- rechargeable/replaceable battery
- micro USB cable for charging the battery
- the unit is foldable into the mask for an easier storing and carrying of the mask
- 25h autonomy, 1h charging time
- 250m range of operation
- 40m depth rating (100m available soon)

The new GSM DC2 consists of three main parts:

1. **PTT/MIC**

The switchboard consists of two buttons

The yellow button has 3 functions:

- During a “normal” use it is activating the transmission mode when pressed and the receiving mode when released (PTT)
- When into the programming mode it is used to make the desired selection by pressing once quickly.
- When the D.A.T. mode is activated, a quick press will exit the D.A.T. mode.

The blue lever style button has 2 functions:

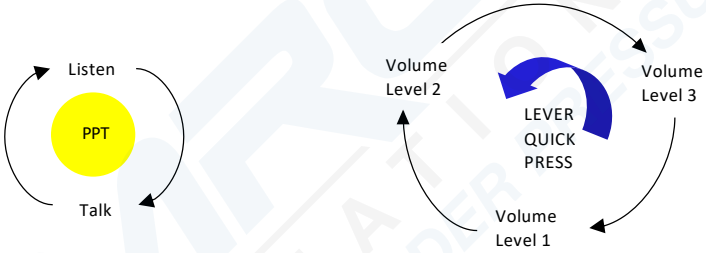
- Volume adjustment; by pressing it quickly it is increasing the receiving volume. There are 3 volume level steps, the unit is always turning on level 2, by pressing it once the volume will rise to level 3, by pressing it again it will lower to level 1… etc.

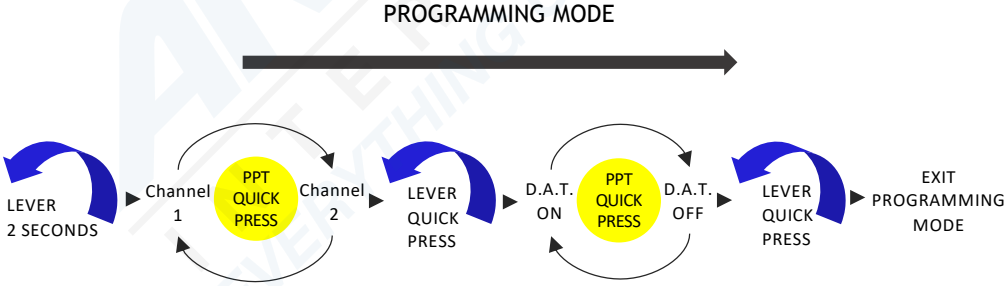
- Programming mode navigation: by keeping it pressed 2 seconds the unit will enter the programming mode guided by voice “programming mode” followed by the first selection possible “channel one”, pressing quickly again the blue lever will take the unit to the next step of programming “D.A.T. mode ON”, another quick press will exit the programming mode.

Functioning scheme:

NORMAL USE

As soon as the unit is submerged it is turning automatically ON and the diver hears a «unit ON» message. Now the unit is working in «PTT mode (D.A.T. OFF), Volume 2.
The unit is always in listening phase until the diver pushes the PTT yellow button, keeping it pressed the diver is able to communicate to other underwater or surface units activated on the same channel. Releasing the PTT button will bring the unit back lo listening phase.
When in normal use and listening phase the volume may be adjusted by quickly pressing the blue lever style button, the volume lever will increase cyclically from 1, 2, to 3 and back to 1.





D-MIC
The new D-MIC is assembled to be less invasive and delicate than any other underwater microphone.
It is still possible to detach and replace by using two screws.

2. **Main electronic housing with L speaker strap holder, wet activation screws and foldable support for SPACE EXTENDER FRAME**

On the internal side there is the left ear speaker, on the external side the antenna and the two wet contacts for the automatic turning on/off of the unit, on the sides there is the strap holder to keep the left strap in a streamline position after the adjustment of the mask and the new foldable support for the extender frame to bend the communication unit towards the inside of the mask to store it in an easier and more compact way.

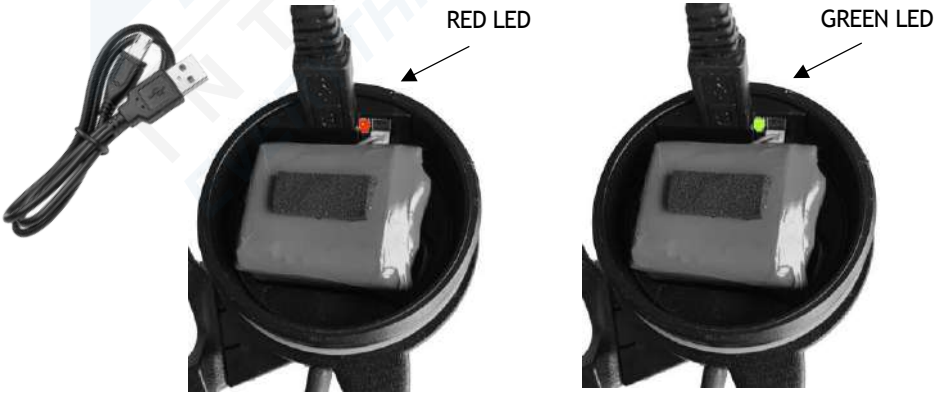
WARNING: These screws are should not be unscrewed or screwed in, more, at any time.

3. **Battery compartment with rechargeable Li-Ion 3.7v Battery, battery charger management electronics, strap holder and foldable support for SPACE EXTENDER FRAME**

The compartment may be opened to recharge or replace the battery.

WARNING: check that the two seals are in position, clean and lubricated before closing the compartment and dive.

When connecting the micro usb cable to charge the battery a red LED will show battery under charge while a green LED will show battery fully charged. The micro usb cable may be connected to a wall adapter, 12v adapter, power bank, P, any 5v USB power supply.
On the sides there is the strap holder to keep the left strap in a streamline position after the adjustment of the mask and the new foldable support for the extender frame to bend the communication unit towards the inside of the mask to store it in an easier way.



Mounting the GSM Mercury on the Extender Frame

The Bridges R & L and screws are comprised with the unit.
Start removing from the Extender Frame both side connections as shown in the picture below.

Begin mounting the L, antenna earphone of the Mercury. Securing it to the Extender Frame exactly like a Neutral or an earphone support. Bridges have L and R written on them for identification. finish by screwing firmly the bridges on the inside.

Be careful to insert the support in the correct position with no gap between the support and the frame.

Proceed connecting the PTT/MIC on the COMMUNICATION side port of the mask by screwing it on. The crown around the PTT will turn until flush.

Last, connect the battery compartment to the right side of the Extender Frame by having the cable connecting the two ears passing underneath the straps into the face seal groove.

Microphone

The GSM Mercury uses a dynamic microphone, **"D-Mic II"** encapsulated and protected by a hydrophobic membrane.
It is very similar to the **D-Mic** but in a different housing allowing a much easier handling and use of it.

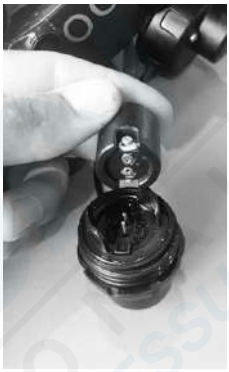
The microphone allows dependable clear reproduction of the human voice. It removes unnecessary noise such as the noise of bubbles being exhaled from the mask.

The **D-Mic II** microphone uses a hydrophobic membrane that allows air to pass through while protecting the microphone from water. This membrane also reduces the "muffling" effect allowing a phonic performance that is very high. Another characteristic of the hydrophobic membrane is its mechanical strength. The **D-Mic II**, is fitted with a membrane that is designed to handle pressure of more than 1bar (14.7 PSI). If the membrane brakes, the microphone will flood causing transmission to stop. OCEAN REEF IDMs masks are designed to operate with "balanced" pressure. If the mask is removed underwater the microphone WILL NOT suffer any damage. However, continuing to descend WITHOUT the mask sealed on the face the microphone may result in exceeding the 1 bar mecahnical resistance of the membrane, resulting in damaging permantly the microphone (in relation to the depth at which the mask was removed). Ascending must be done in accordance with the dive tables or dive computer to avoid decompression problems. The communicator and microphone should be rinsed with fresh water (immersed, high pressure water is not reccomended as it can damage components) after each dive and should be placed in a well ventilated area that is not exposed to direct sunlight to dry.
D-Mic II does not have a polarity restriction when assembled on the PTT contacts. Be careful to unscrew the two screws before removing it.
Clean the contacts and lubricate them on a timely base.

Replacing the New D-Mic

Remove the PTT/MIC assembly from the mask, unscrew few threads of the two little side screws and pull off the new D-MIC. Replace with the new one being careful not to overtight the little screws to avoid damages to the contacts.

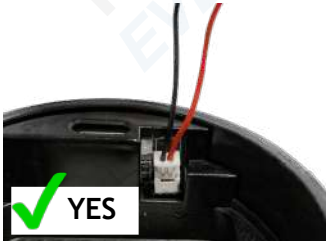


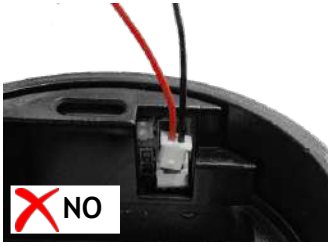


Replacing the Battery.

The battery is replaceable by disconnecting the white plug.


The polarization of the plug has an orientation. **Do not force it if it is hard to push it down.**





Checking before use

- Once the battery has been charged and the battery compartment lid has been closed properly, wet your fingers and touch the two wet contact screws (On/Off switch contacts) to turn on the unit. You will hear a voice saying "Unit ON" indicating activation.

- When the unit is turning on it will always and automatically go on channel one and volume level 2. The unit will turn off immediately when the contacts are released (or when the unit is going out of the water).
  Keep your fingers on the wet contact screws.
  Run another finger along the antenna. You will hear a "zzzzzz" type sound coming from the speaker.
  Push the blue level style button to increase the volume to 3, 1 and back to level 2.

- Bring the antenna transducer near the antenna of another active unit (about 5 cm / 2 inches), keeping your fingers on the On/Off contacts. You should also be able to hear the communication when the unit is not immersed in water.
  Pushing the PTT button you will hear a "beep" indicating that you can transmit, speak keeping the PTT button pressed and check that the other unit is receiving.
  Do the opposite operation to check the receiving of your GSM Mercury.

- Push and hold for two seconds the blue level style button, you will enter the "program mode", check the settings of you r unit and exit by following the instruction at page 6.

If you need to use the D.A.T. mode remember that only one diver per time should use the DAT mode!!
Disregarding this direction will cause communication to be confused and useless.

A repeated voice signal "Battery Low" (about every 30 seconds) means that the battery is running low. You still have about 2 hours depending on your use prior to recharge.

Basic Instructions for Underwater Communication

The GSM Mercury is activated for reception as soon as it is immersed in water, and it turns off a few seconds after it dries out.
When it's switched on, this is confirmed by a message "Unit ON".
Push the PTT button and the activation of the transmission phase is anticipated by a "beep", wait until this is over before speaking.
When a message is incoming from your buddy or from the surface you'll hear the "beep" that anticipate the transmission, breath slowly to avoid bubbles to disturb communication.

Inform your buddies before switching to a different transmission channel!

Notes

- When speaking to other divers, remember that they are diving. It is best to attract their attention before sending a message.

- Talking and listening while underwater requires practice. With experience, divers will become more proficient in the use of the communications system.

- Speak slowly, and pronounce each word clearly. Only speak after having sent a call impulse by pressing the PTT button. It is advisable to practice in a swimming pool before using the device in open water.

- Bubbles, and especially, small air bubbles, that are in contact with or near those communicating reduce the transmitting power.

- Obstacles such as rocks may reduce your communication range.

- It is normal to receive a background noise in certain moments, movement of sand and pebbles on the seabed, marine motors, cetaceans, and other sources can create vibrations in the water that give rise to a range of ultrasonic waves that can be picked up by the GSM Mercury.

- When using the device in shallow water, you may experience difficulty communicating because:
  1. The surface is full of air bubbles formed by the waves.
  2. The sand under water is causing ultrasonic noise due to the waves.

For more information:
https://diving.oceanreefgroup.com/support/

Warnings & Troubleshooting

- Do not use solvents (such as diluents) to clean the unit. They can cause irreparable damage. Only use neutral detergents.
- Use fresh water to remove the seawater from your GSM Mercury after each use. The product must be stored completely dry.
- Do not expose the unit to direct sunlight for prolongued periods of time.
- Do not leave the unit in your car. Take in the consideration that the unit is dark color and may become very hot if left under direct sunlight. Handle with caution.
- Do not keep the unit in places that are too hot or too cold, such as near air conditioners.
- Do not keep the unit near magnetic fields.
- Do not allow it to fall or be knocked around.
- Make sure there is no dirt, debris or water in any part of the unit, especially in the battery housing or under the o-ring. If any dirt, debris or water is found, remove it.
- When recharging/replacing the battery check the o-ring for damage. If it is damaged, replace it. The O-ring must be lubricated with silicone lubricant.
- Do not dismantle or repair this unit yourself.
- Follow the instructions for correct maintenance of the microphone and battery housing, given in previous chapters.
- Routinely clean the microphone contacts and check the integrity of the hydrophobic membrane and the casing. If the microphone is flooded, it CANNOT BE recovered and must be replaced.
- Do not touch the hydrophobic membrane with any sharp objects that may damage it.

Warnings

Communication clarity and distance may depend on environment.

Not a cellular phone, expect to speak slowly and clearly for maximum clarity. Sounds of the water may make it difficult to hear perfectly. Talk slowly and take your time. Signal end of your communication to tell your listeners they are now free to reply i.e. "OVER".

Being it a Push To Talk system, like a walkie-talkie unit, if one person talks, all other units can only listen. One at a time talking.

Speaking in the mask for prolonged sentences may result in “need to catch breath” feeling. This is normal, due to speaking in a mask. It is like trying to speak after or while running. Take your time. Rest and breathe. Always remember that you are in water and follow safe and healthy behaviors.

Technical specification

- Type: Wireless ultrasonic
- Activation: Automatic
- Transmission: PTT/D.A.T.
- Receiving: Automatic/D.A.T.
- Speaker volume adjustment: 3 levels.
- Charging time from fully discharged 1h
- Autonomy: 25h
- System Type: H-SSB
- Frequency: ch1 32.768 KHz, ch2 41.000 KHz
- Working range: 250 m/800 ft
- Low battery autonomy: 2h
- Low battery alarm: “Battery Low” warning every 30 seconds
- D.A.T. mode: 30 sec transmittion-20 s receiving

Warranty

- OCEAN REEF communication units are guaranteed to be free of material or manufacturing defects for a period of 24 months from the time the unit is purchased. For the duration of the guarantee, the Company's responsibility is limited to replacement of any parts that are defective in our opinion, and that have not been used incorrectly or handled negligently. The unit must be returned to the outlet from which it was bought, along with the warranty card.

- Even during the guarantee period, this guarantee shall not be valid where:
    1. Damage was caused by incorrect handling or carelessness.
    2. Damage was caused by the unit falling after it was purchased.
    3. Damage caused by fire, earthquake, floods, lightning, or other natural disasters, pollution or electrical charges.
    4. The warranty card is lost or not found.

Ocean Reef Group

OCEANREEF underwater, naturally.
SAFETY

protection equipment
engineering
electronics

MESTEL SAFETY Srl
Via Arvigo, 2
16010 Sant'Olcese Genova (Italia)
Tel. +39 010 7082011
Fax +39 010 7082099

OCEAN REEF Inc
1699 La Costa Meadows Dr. Suite 101
San Marcos, CA 92078
Phone +1 760 744 9430
Fax +1 760 744 9525
Toll free 1 800 922 1764

diving.oceanreefgroup.com
oceanreefgroup.com