GSM|MERCURY

OCEANREEF
underwater, naturally.

For nearly 70 years, OCEAN REEF has been involved in the underwater diving industry. We have contributed much to this industry, from fins and snorkels to the most modern systems of underwater communication. Through the spirit of intrepid pioneers, brilliant inventors, passionate divers, and dynamic entrepreneurs, OCEAN REEF has been able to turn dreams into reality in the underwater world.
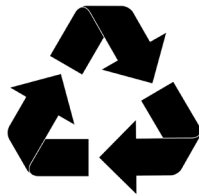
OCEAN REEF USA

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In order to limit our paper consumption, and as a part of our environmental friendly and responsible approach, OCEAN REEF prefers to put user documentation online rather than print them out.

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MERCURY COMMUNICATION UNIT OWNER'S MANUAL

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Introduction

GSM Mercury communication unit is the newest in OCEANREEF range of products.
Its frequencies are compatible with the 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 unit with anything else than fresh water and the compartments opened and/or unscrewed.

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

⚠️ While surfacing from a dive continue to breathe even if you are listening to the communication unit. Lung expansion injuries may result if you ascend while holding your breath.

⚠️ 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).

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Product Specs

Mercury, the new ultrasonic communication unit, is made to fit only on 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 PTT 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 lever style button has 2 functions:

- Volume adjustment; by flipping it quickly it is increasing the receiving volume. There are 3 volume level steps, the unit is always turning on level 2, by flipping it once the volume will rise to level 3, by flipping 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 lever will take the unit to the next step of programming *"D.A.T. mode ON"*, another quick press will exit the programming mode.

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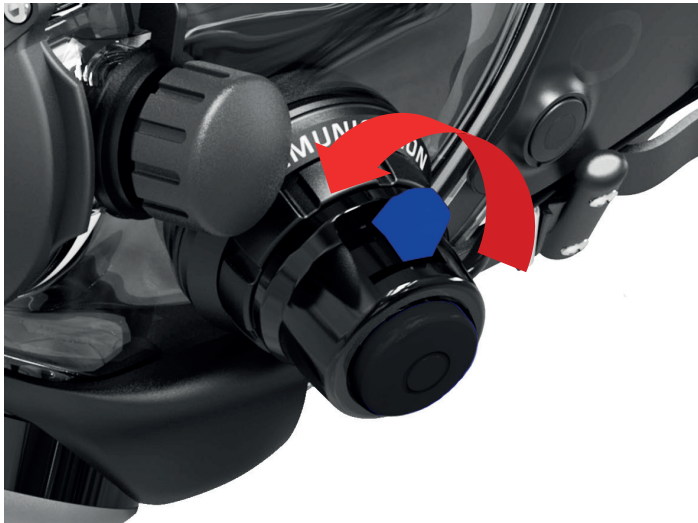
In the following the functioning scheme of PTT/MIC is summarised.

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 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 flipping the lever style button, the volume lever will increase cyclically from 1, 2, to 3 and back to 1.

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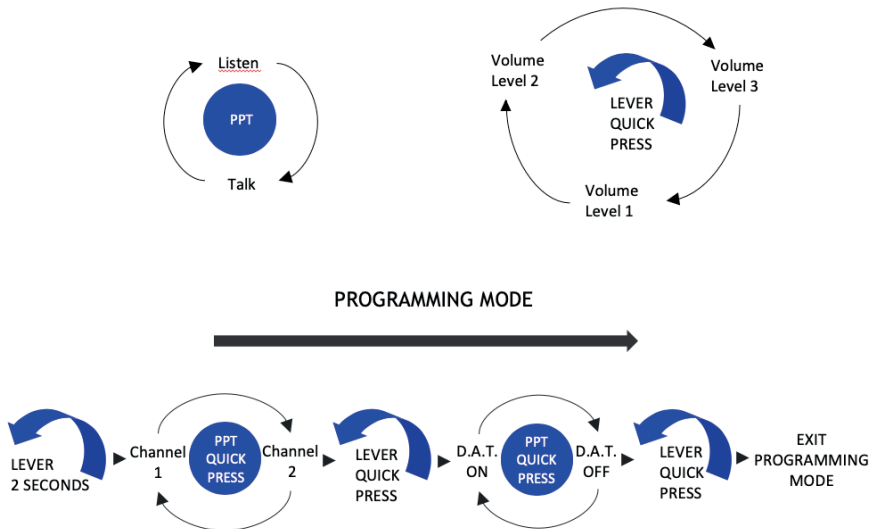
2. Main electronic housing with L speaker strap holder, wet activation screws and foldable support for SPACE EXTENDER FRAME

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: Do not unscrew the wet activation from the main eletronic housing!

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: In the compartment there are 2 seals, specifically a red o-ring on one side and a black gasket on the other, 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.

RED LED   GREEN LED
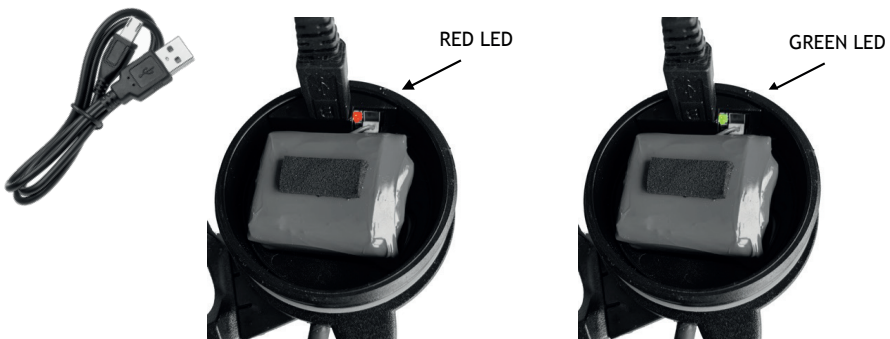
Mounting the GSM Mercury on the Extender Frame

The Bridges R & L and screws are included 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.

BLUE-MIC Microphone

The GSM Mercury uses a dynamic microphone, "Blue-Mic" encapsulated and protected by a hydrophobic membrane.
The Blue-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.
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.
Its design is very similar to the D-Mic but allows a better audio clarity.

The Blue-Mic 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 Blue-Mic 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.

OCEANREEF 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 mechanical resistance of the membrane, so damaging permantly the microphone (in relation to the depth at which the mask is 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.
Blue-Mic does not have a polarity restriction when assembled on the PTT contacts. Be careful to unscrew the two screws before removing it.
Clean the microphone contacts and lubricate them on a timely base.

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Replacing the Blue-Mic

Remove the PTT/MIC assembly from the mask, unscrew few threads of the two little side screws and pull off the Blue-Mic. Replace with the new one being careful not to overtighten the little screws to avoid damages to the contacts and to mount the microphone in the same direction.

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 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 *"CHANNEL ONE"* 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 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.

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

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

⚠️ <u>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.</u>

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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 is switched on, this is confirmed by a message *"CHANNEL ONE"*.
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 primarely 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. Speak only 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 moving close to the antenna, could reduce the transmitting power.

• Obstacles, such as rocks, may reduce your communication range.

• It is normal to receive a background noise in certain moments. Movements of sand and pebbles on the seabed, marine motors, cetaceans, and other sources can create vibrations in the water which 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 underwater sand is causing ultrasonic noise due to waves.

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. If it is damaged, replace it. The O-ring must be lubricated with synthetic lubricant (i.e Christo-lube).

- Do not dismantle or repair the communication unit by yourself.

- Follow the former instructions for the correct maintenance of the microphone and the battery housing.

- 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 object that may damage it.

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Warnings

⚠️ Communication clarity and distance may depend on the environment.

⚠️ It is not a cellular phone, so 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.

Release 1.1

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

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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 the replacement of any parts that are defective, 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 warranty period, warranty shall not be valid where:

1. Damage is caused by incorrect handling or carelessness.
2. Damage is 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.

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

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Operating the unit

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