



SCUBA WIRELESS VOICE
COMMUNICATION SYSTEM

OPERATOR'S MANUAL

MODEL COM-S01R

All Models

Surface Unit

Table of Contents

INTRODUCTION	1
Determining the Options and Capabilities of your Model.....	2
OPERATING INSTRUCTIONS.....	4
Orientation	4
Battery Pack	5
How to charge the Surface Unit.....	7
Transducer.....	8
Power ON and Volume Control.....	9
Push To Talk Button	9
Audio Outputs	9
OPERATING TIPS.....	10
CARE AND MAINTENANCE	10
WHAT TO EXPECT WHEN COMMUNICATING UNDERWATER	
.....	11
Range Considerations	12
Two Channel Units (COM-S01 with OPTION-2CH-xxS)	13
TECHNICAL SPECIFICATIONS.....	15
WARRANTY	16
SERVICING	18
Contact Information.....	18
Warranty/Repair Conditions	18
Sending Procedure	18

INTRODUCTION

Congratulations! You have just purchased the most advanced sport communicator on the market.

The model COM-S01R is a PUSH TO TALK wireless transceiver for underwater communication between the surface vessel and SCUBA divers equipped with a DIVELINK communicator.

The COM-S01R Surface Unit is worn on the head as a headset with a boom microphone. The headset has two ear muffs to reduce unwanted sound in a noisy environment.

DIVELINK employs the latest in micro-electronics technology, and has been engineered to be as simple to use as possible. There are no adjustments to slow you down. *DIVELINK is fully automatic.*



Determining the Options and Capabilities of your Model

The Head Mount Surface Unit Model COM-S01R comes with two battery options and other parts that may also be ordered separately:

Powered by Alkaline Batteries



This Surface Unit comes with MIC-S01 detachable microphone, XDR-S01 transducer on 10 meter cable, and BAT-S01 battery holder for 8 AA alkaline cells:



BAT-S01
(batteries not included)

XDR-S01

Powered by Rechargeable Pack



COM-S01R shown with battery pack undergoing charge while inside earcup.

Also included is a rechargeable battery pack BAT-S01R-NIMH



and charger CHG-QC1-UNIV



At the time of ordering, the following options can be selected:

OPTION	
-1CH-BS	1 channel Surface Unit with Public Safety Frequency
-1CH-CS	1 Channel Surface Unit with 32768 Hz Ref. Frequency
-2CH-ABS	2 Channel Surface Unit with Channel 1: 31250 Hz, Channel 2: Public Safety
-2CH-ACS	2 Channel Surface Unit with Channel 1: 31250 Hz, Channel 2: 32768 Hz
-2CH-CBS	2 Channel Surface Unit with Channel 1: 32768 Hz, Channel 2: Public Safety

Check the model number and options by looking at the serial number sticker, which can be found inside the battery earcup:



OPERATING INSTRUCTIONS

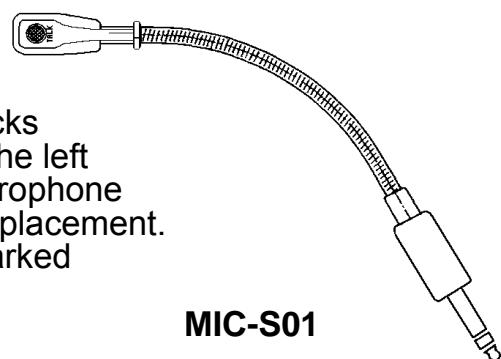
Orientation

The Surface Unit has one earphone in the same ear cup as the volume control, microphone and push to talk button. You can wear the Surface Unit with the earphone on the left or right side of the head.

The Surface Unit uses a "Push To Talk" button. If you are right handed, you may want to place the ear cup with the push to talk button over the left ear. You will then have a free right hand while using the left hand to press the push to talk button.



The headset has two microphone jacks. The boom microphone plugs into one of the two jacks that suit placement of the earphone on the left or right side of the head. The boom microphone may also be unplugged for storage or replacement. When speaking, ensure that the side marked "TALK" is directed towards your mouth.



Battery Pack

When operating, a LOW POWER BEEP will sound every 8 seconds when the battery is almost discharged.

The battery compartment is in one ear cup. Batteries may be accessed by pulling off the ear muff pad and removing the battery pack.

Your Surface Unit contains the AA Alkaline battery holder BAT-S01. Install fresh alkaline AA cells.



BAT-S01
(empty)



BAT-S01
(loaded)

Make sure that all battery cells are loaded with the correct polarity. If they are incorrectly loaded, the low power beep tone will be heard.

Caution: Please do not attempt to connect any other battery or external power to the terminals. The warranty will be voided if power other than the Surface Unit battery pack is applied to the power terminals. In particular, over 12.5 volts is not to be applied to the terminals.



If instead you want to use the rechargeable system, then you use the rechargeable pack BAT-S01R-NIMH and the DIVELINK charger CHG-QC1-NIMH.

BAT-S01R-NIMH is a matched cell battery pack with an energy management system to allow fast charging.

CHARGE STATUS LIGHTS					
20%	40%	60%	80%	100%	Charged
RED	AMBER	AMBER	AMBER	GREEN	GREEN



BAT-S01R-NIMH



CHG-QC1-UNIV

Rechargeable Battery Specifications

Model BAT-S01R-NIMH

Battery Type: Nickel Metal Hydride
Battery Rating: 1650 mAH matched cells
Battery Life: Over 9 hours.
Amperage: Up to 300 mA continuous current is available.
Short circuit protected.
Voltage: 9.6 Volts under load at full charge.

The battery pack clips onto the button terminals and is placed inside the battery compartment.

The felt cover is replaced over the battery with the button hole located at the top for the purpose of recharging.

The battery pack is protected by a resettable fuse.



How to charge the Surface Unit

There is no need to remove the battery pack from the earcup. Plug your charger **CHG-QC1-NIMH** into the mains power, then look for the button hole in the battery ear cup. Plug the DC power plug into the battery pack and wait until the charge lights indicate full charge (may be seen if the battery pack is removed).



Make sure that the Surface Unit is OFF while charging.

Also charge the battery in a cool environment. Direct sunlight will overheat the battery and it will not accept a charge until cool enough.

Do NOT immerse the battery pack. Doing so will void the one year warranty.

Transducer

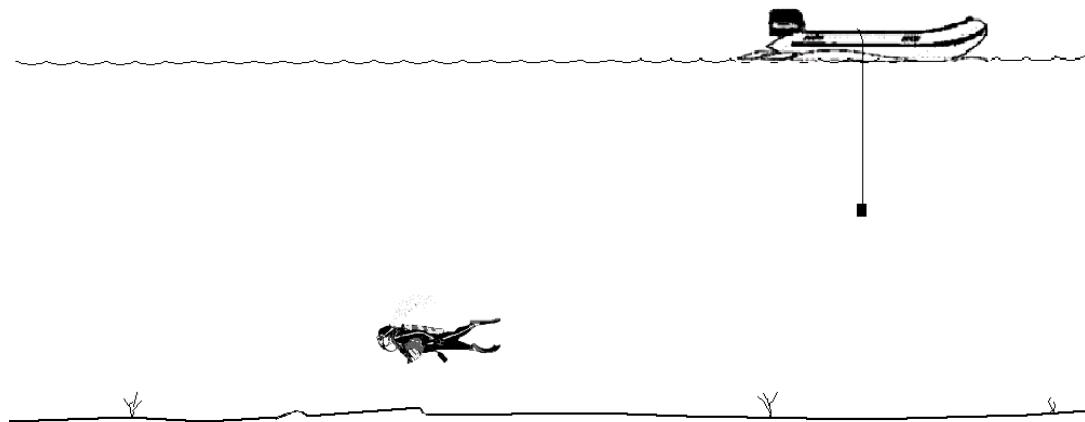
Uncoil the transducer cable and put the transducer into the water. Place the transducer at the same depth as the diver, or as deep as possible but not right on the ocean floor. Secure the cable to the side of the vessel. Allow yourself sufficient cable to move about.

1. Apply a small coating of grease, such as Dow Corning® 4 Electrical Insulating Compound, onto the contacts of the extension cable plug.
2. Plug the transducer into the connector at the bottom of the ear cup.



Caution: *The transducer is most subject to damage when it is attached to the extension cable, as it can swing easily and hit objects while being lowered into the water. Particular care must be taken to avoid this occurrence.*

3. Lower the transducer into the water and position it below the thermocline. If there are excessive currents in the area, or if operating while under way, attach a small weight to the transducer to prevent it from drifting upwards or away from the boat.



Power ON and Volume Control

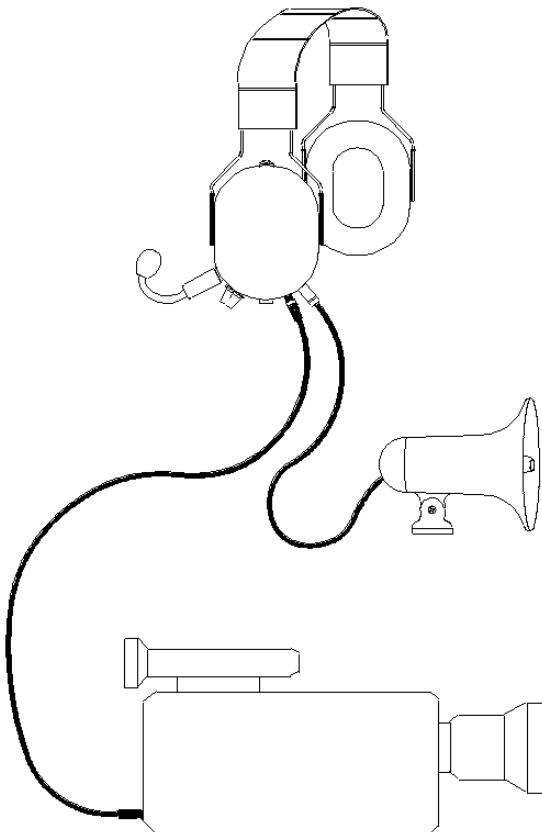
Power up the DIVELINK by rotating the volume control knob clockwise. To conserve battery power and operating time it would be best to wait until the diver is in the water before turning ON the DIVELINK. To turn OFF, rotate the knob anti-clockwise until you hear a "click".

Adjust the volume control to suit your hearing. The DIVELINK has an automatic squelch circuit to eliminate background noise, so bear in mind that you may not hear much sound until a diver speaks into another DIVELINK.

Push To Talk Button

Speak into the DIVELINK while pressing the Push To Talk button located at the TOP of the ear cup. Speak with your mouth within one centimetre from the microphone. When you finish speaking, release the button and you will hear other DIVELINK transmissions.

Remember that the microphone is NOISE CANCELLING. If speak into the microphone with the front and back ports at right angles to your mouth, you may not be heard by the diver.



Audio Outputs

Two electrical outputs are provided:

1. The LINE OUTPUT allows surface-to-diver and diver-to-diver conversations to be fed to external sound equipment. This output has been conditioned to provide a standard audio line level signal to the "LINE IN" jack of your audio tape recorder, video tape recorder or public address system. (You will need to purchase a LINE-to-MIC pad to plug this signal into a camera Microphone Jack.)

2. The SPEAKER OUTPUT will drive an 8 ohm loudspeaker, which plugs into the DIVELINK "SPKR" jack with a 3.5 mM mono plug.

These audio outputs and the antenna are electrically isolated from the



COM-S01R (All Models) Surface Units

DIVELINK electronics to prevent ground loops and to reduce noise when receiving distant signals.

OPERATING TIPS

PRE-DIVE CHECK The DIVELINK can transmit and receive in air over a short distance (up to 30 cM). A functional check may be performed before a dive by speaking into one DIVELINK and listening to a second DIVELINK.

BATTERY To conserve battery power, keep the DIVELINK turned off until necessary.

CARE AND MAINTENANCE

During use, be very careful not to allow water to splash onto or inside the DIVELINK headphones, microphone, or any of the plugs connecting to the DIVELINK. Salt water splashed onto any electrical connection will degrade performance, since salt water is conductive and will short out or eventually corrode a connection. If salt water is splashed onto a plug, it should never be connected to the DIVELINK. It should be wiped off with a damp cloth dipped in fresh water, and allowed to dry before use. ***As a general maintenance procedure, silicone grease may be applied to all plugs to prevent long term corrosion.***

Cleaning

Do not clean the DIVELINK with isopropanol, acetone or other harsh solvents. A weak detergent solution in a damp cloth is all that is necessary to remove dirt from the earphones. During cleanup, do not allow water to run freely around the headphones.

Storage

The SURFACE DIVELINK should be stored in a dry environment to prevent long term corrosion of the audio and battery terminals.

Handling

Do not drop or jar the DIVELINK. The antenna located at the end of the cable is sensitive to sudden mechanical shock. Do not stretch or cut any cables. A cut in the antenna cable will allow salt water into the sealed jacket and eventually corrode the wires.

WHAT TO EXPECT WHEN COMMUNICATING UNDERWATER

Barriers to Transmission

Several factors can be barriers to sound transmission in the water.

Water density. Sound transmission can be interrupted by a change in water density, most typically by the thermocline. (The thermocline is a layer of water located typically within ten feet of the ocean surface; it has a markedly different temperature than the water below ten feet.)



Important!: It must be understood that it is not always possible for the Surface Unit transducer, if it is located over the thermocline, to communicate with divers under the thermocline. In addition, if the transducer is lowered below the thermocline, it should not be allowed to touch the ocean floor.

Wave action or sea floor. Sound transmission can be reduced by wave action at the surface, or by the sea floor.

Background noise. Sound transmission range can be reduced by "background" noise, which is generated by a rough sea, by rain, by biological noise such as a snapping shrimp, or by man-made noises such as engines and high speed propellers.

Body shadow. Long-range sound transmission can be affected by the position of the diver's body in relation to the DIVELINK equipment. A range reduction can occur if the diver's body is in the line of sight between his/her equipment and that of another diver or a Surface Unit.

This effect is known as body shadow. It is caused by the absorption of sound by air inside the diver's dry suit, or by air in the diver's lungs. To prevent body shadow, the diver should turn 45° so that the line of sight between the DIVELINK equipment is restored.

Factors not affecting sound transmission. On the positive side, underwater sound transmission is not affected by muddy or turbid water, and is equally good in fresh and salt water.

Range Considerations

In consideration of the barriers to sound transmission underwater (see the section entitled Barriers to Transmission), use the following guidelines for optimal range:

- Divers should report the position of the thermocline to other divers and surface personnel.
- Avoid trying to transmit through a solid object, such as a ship's hull or an underwater cliff. Attempting to do so causes the sound transmission to be a product of reflections from the surface, the ocean floor, or underwater objects.
- Keep the transducer away from the ocean floor, and as close as possible to the same depth as the diver.

Chemical Neutralizing Fluid

It is possible that the transmission range can be reduced by a thin layer of air bubbles blocking the ultrasonic signal at the antenna. In open water, this will not be the case, but ***when used in a pool that has been recently treated with chemicals***, a thin layer of bubbles can build up on plastic surfaces. This is prevented by the use of the CHEMICAL NEUTRALIZING FLUID, DIVELINK part number CNF-01. The antenna is the black knob at the end of the cable. A coating of this liquid around the antenna cylinder is all that is required before every use.

Two Channel Units (COM-S01 with OPTION-2CH-xxS)

The COM-S01 Surface Unit referred to by this Section is outfitted with an option that allows it to transmit and receive on one of TWO channels.

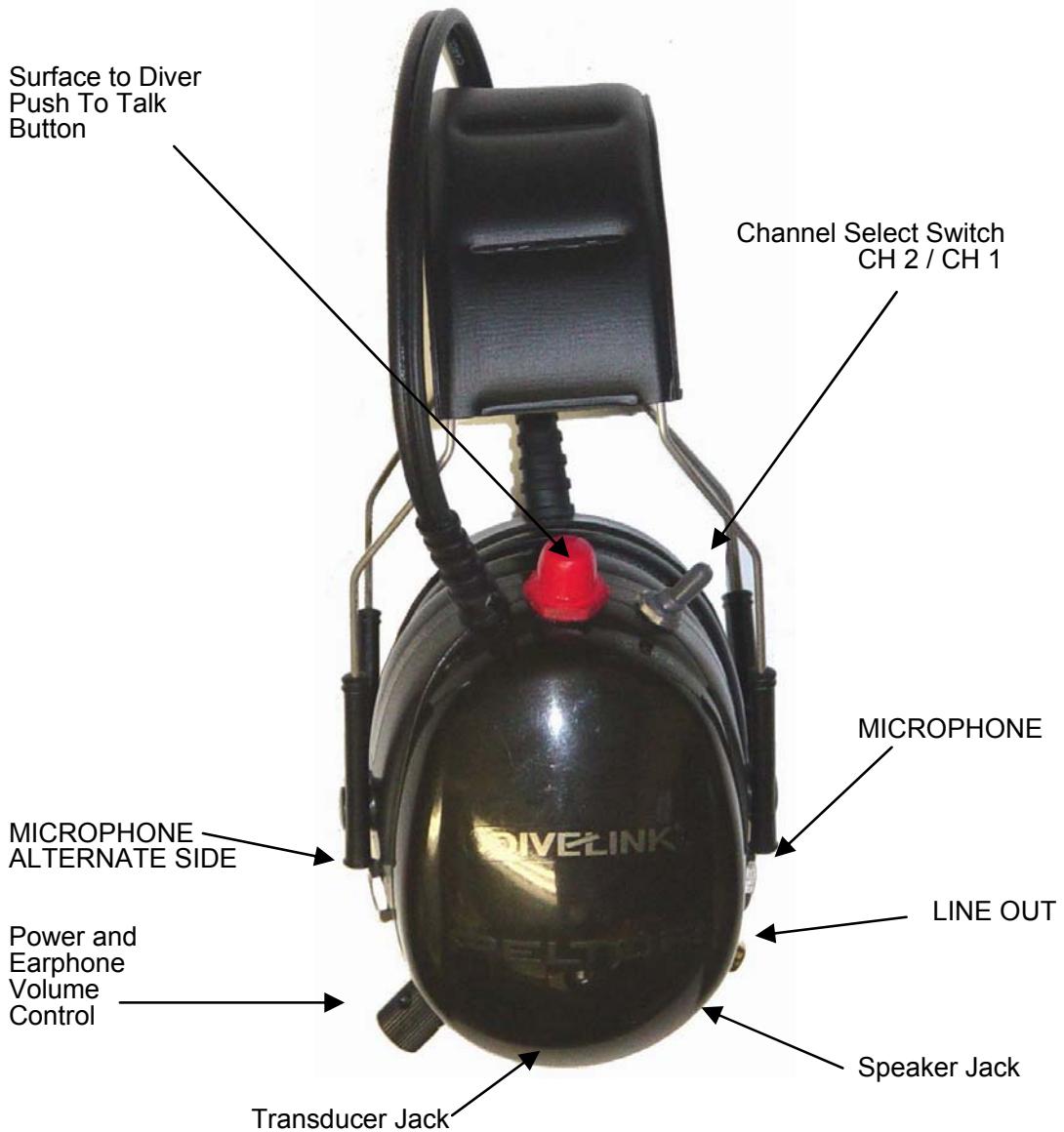


COM-S01 with OPTION-2CH
Surface Unit with 2 Channel Option

Please refer to page 3 to determine the exact frequencies that apply to channel 1 and channel 2. Other than the power/channel select switch, the operation of a two channel model will be the same as described previously in this manual.

DIVELINK® COM-S01 Two Channel Model Surface Unit

The Two Channel Model has the following controls and connectors:



Power ON and Volume Control

Power up the DIVELINK by turning clockwise the Power and Earphone Volume Control. Select the desired channel with the Channel Select Switch to match another DIVELINK that you want to communicate with. To conserve battery power and operating time it would be best to wait until the diver is in the water before turning **ON** the DIVELINK. Adjust the volume control to suit your hearing. The DIVELINK has an automatic squelch circuit to eliminate background noise, so bear in mind that you may not hear much sound until a diver speaks into another DIVELINK.

TECHNICAL SPECIFICATIONS

Transmission:	Wireless ultrasonic. Upper Side Band modulation, no carrier, ref. 31250 Hz. (Refer to page 3 for different frequency options under OPTION-2CH-xxS.)
	1 watt peak output power. Push to talk with transmitted speech returned to earphone. Audio pass band 400Hz to 5000Hz, normal voice range.
Reception:	Automatic gain control and automatic squelch. Manual volume control to earphone.
Signals:	Low power beep at 488 Hz short burst every 8 seconds into local earphone; communications can continue.
Headset:	Employs one earphone and removable boom microphone. Can be worn with boom on left or right.
Range in water:	Up to 500 Meters may be obtained under ideal conditions, depending on the local acoustic environment. Minimum 50 Meters line of sight, in the plane defined as 90 degrees to the antenna cylinder's central axis.
Power Source	Eight x 1.5 volt alkaline AA cells in BAT-S01 holder, (batteries not included) are located in one ear cup. Also included: BAT-S01R-NIMH rechargeable battery pack and fast charger CHG-QC1-UNIV.
Operating Time:	Over 8 hours; operating at 20% transmit duty cycle.
Transducer:	Placed in water at end of 10 Meter (30 foot) cable, included, (replaceable part number XDR-S01). Cable may be unplugged. Longer transducer cable options are available: XDR-33-S01 (33 meter) and XDR-67-S01 (67 meter).

DISCLAIMER

The **DIVELINK** Communicator is intended for use only by certified divers who are aware of and trained to deal with the risks and hazards connected with sport diving. The **DIVELINK** Communicator is intended to enhance the sport of SCUBA diving. It is not proclaimed or intended to be used as a substitute for safe diving practices. It is the personal responsibility of every diver to ensure that they and their partner dive safely.

WARRANTY

The manufacturer warrants this product, for a period of one year from the original date of purchase, to be free of defects arising from material or craftsmanship used or provided by the manufacturer, provided the **DIVELINK** product is used under conditions of normal recreational SCUBA use and in compliance with the operating instructions set out in the owner's manual. The validity of this warranty is conditional upon the completion of a warranty card, and its receipt, by the factory. (See Limitations).

This warranty is voided in the event that service, or repairs to the **DIVELINK** unit is not performed by a factory authorized service centre.

Should this **DIVELINK** Communicator prove to be defective within the warranty period, it will be repaired or replaced free of charge, at the election of the manufacturer, excluding shipping and handling charges.

LIMITATIONS

This warranty specifically does not extend to damage to face masks, regulators or hoses, arising from the use of the **DIVELINK** or any damage to the **DIVELINK** caused by improper maintenance, modification or tampering to the **DIVELINK**.

The original warranty card must be on file at the **DIVELINK** factory with a copy of your purchase receipt to be eligible for the one year coverage and any warranty service. The warranty card is supplied with this manual and must be mailed within 15 days of purchase. Warranty is non-transferable and is solely for the benefit of the original owner.

DISCLAIMER OF LIABILITY

The manufacturer, its distributors and retailers MAKE NO WARRANTIES, either expressed or implied, with respect to the DIVELINK Communicator, or this owner's manual except for those stated above. IT IS EXPRESSLY UNDERSTOOD that in purchasing or using the DIVELINK Communicator, the owner or any other person who may use it accepts it "AS IS" with the entire risk as to its quality, performance, merchantability, or fitness for any particular purpose being with the buyer or user. This excludes replacement of defective parts to the original owner, in the first year after purchase under the conditions set forth in the preceding limited warranty section.

By purchasing the DIVELINK it is agreed and understood that in no event will the manufacturer, its distributors or retailers be held liable for any personal injuries arising from its operation, or for any damages whether direct, indirect, incidental, or consequential, even if the manufacturer, distributor or retailer have been advised of such damages.

SERVICING

Contact Information

Mailing Address: DIVELINK
300-1095 McKenzie Avenue
Victoria, BC Canada V8P 2L5
Canada

Telephone: 1-(250) 479-4868

E-mail: sales@divelink.net

Internet Web Page: www.divelink.net

Warranty/Repair Conditions

Any defect of the unit in workmanship or material, and discovered within one year from the date of purchase, must be promptly reported to the DIVELINK factory.

No product returns will be accepted by the factory without a Returned Merchandise Authorization (RMA). The factory provides the RMA number and shipping instructions to the owner, who returns the defective part, freight prepaid, to the factory.

DIVELINK will repair or replace the defective part at no charge, within a reasonable time, as it deems necessary.

Sending Procedure

Inside the box in which you are sending the defective part, provide the following on a single sheet of paper:

- RMA number
- Your complete shipping address (no Post Office [P.O.] box numbers)
- Your phone number (with area code)
- Description of the problem for each part being returned (as detailed as possible)