

PRODUCT WARRANTY STATEMENT

LIMITED WARRANTY:

Earmark warrants to the original purchaser the Earmark products shown in the following list against defects in materials and workmanship for the period shown listed next to each product, commencing with its date of delivery to the original purchaser except that external cords and connectors are so warranted for three months after such delivery and micro-phones and antennas are so warranted for twelve months after such delivery.

Series 4C Headsets	36 Months	Tour Headsets	24 Months
Series 4 Belt-Paks™	36 Months	VOXSET II	24 Months
Series 5 Flex-Paks™	36 Months	Series 4S Headset	24 Months
Multi-Man Base Station	36 Months	Junior Headsets	12 Months
BaseMaster VIII™	36 Months	Headphones	12 Months
Compact Base Station	36 Months	LOUDMOUTH Products	36 Months
MiniBase™	36 Months	Earmark Speaker Mics	24 Months

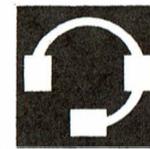
Earmark's only obligation, and the purchaser's sole remedy, under this limited warranty shall be to repair or replace any defective part, or the product itself, upon timely notification of such a defect and upon substantiation that the product has been used for its intended purpose and in the usual manner, and, where applicable, in accordance with Earmark's directions, and has not been altered, misused, abused, or repaired other than by Earmark.

Exclusiveness of Warranty:

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY IMPLIED OR EXPRESS WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE QUALITY OR DESIGN OR ANY OTHER WARRANTY, WHETHER EXPRESS OR IMPLIED.

Limitation of Liability; Remedies:

Earmark shall in no event be liable for (a) any injury or death to persons, or loss or damage to any property; or (b) any commercial losses, special or consequential damages from any cause connected with the Earmark product described herein, such as but not limited to loss to other property or equipment, loss of profits or revenue, cost of capital, cost of purchase of replacement goods, or claims of others against purchaser; and REPAIR OR REPLACEMENT, in the manner and for the period described above, shall constitute purchaser's SOLE REMEDIES and shall fulfill all liabilities of Earmark with respect to the Earmark product described herein, whether in its design, manufacture, sale, delivery, use, non-use, misuse or inability to use the same, and whether based on contract, negligence, product liability, strict liability or otherwise.



EARMARK®

515 Fan Hill Rd., Monroe, CT 06468
Telephone 203-777-2130

400027 REV F

OWNER'S MANUAL

OPERATING INSTRUCTIONS FOR THE SERIES 4C HEADSET

I DESCRIPTION AND GENERAL INFORMATION

Series 4C Headsets are the most advanced radio systems Earmark has produced. They help you do your job with flexibility, convenience and comfort. **Please read Section IIB, Comfort Features, to assure you get off on the right foot!**



A "W" designation in your Headset Model No. signifies Water Resistant. The "W" Series Headsets withstand water spray and are recommended for use in areas of very high humidity. The standard Series 4C Headset has a Noise Reduction Rating of 23. The "W" Series Headsets are not rated for noise reduction.

Your Earmark, Series 4C Headset provides you with hands-free, FM communication capability. It has many features to assist in building your productivity. Earmark Headsets are supplied in a variety of models. Before going any further, please check the name plate label on your Headset and determine which of the below listed models you have. If your Headset model does not match your network type (Simplex, Duplex or Half Duplex), call Earmark.

MODEL DESCRIPTION

HD-4	FULL DUPLEX HEADSET FOR USE IN PAIRS
HS-4	SIMPLEX HEADSET FOR USE IN SIMPLEX NETWORKS
HR-4	DUPLEX REPEATER HEADSET FOR USE WITH A PORTABLE REPEATER BASE STATION IN A FULL DUPLEX NETWORK
HH-4	HALF-DUPLEX HEADSET FOR USE IN HALF DUPLEX NETWORKS WITH A MASTER, REPEATING HEADSET OR A REPEATING BASE STATION
HG-4	REPEATING HEADSET FOR USE AS TOUR MASTER OR HALF-DUPLEX MASTER; MUST BE USED WITH ONE OR MORE HALF DUPLEX RADIOS

Each of these models is interchangeable with the equivalent model Earmark Belt-Pak™. They have identical functions and similar performance. All the above models have certain features in common. Each has a two position power switch that permits you to select HI-Power for maximum operating range or LO-Power for maximum battery life. Each has a variable volume control. The rotary Volume Control Switch is also the main, power off

switch. Each Series 4C Headset has a VOX option built-in. There is also a continuous reading, Battery Condition Indicator Light on the back of every unit. All toggle switches are protected by stainless steel switch guards that inhibit damage from accidents and minimize the potential for accidental actuation. And, with an Earmark portable radio, you always have the ability to actuate the transmitter with your voice.

YOU'RE EQUIPPED WITH VOX130™!

Each Series 4C Radio Headset operates with VOX130 technology. VOX130 is a new, significant improvement in state-of-the-art of *voice actuated transmitter* systems. VOX130 provides several features which have never before been offered in portable radios.

- ◆ First, VOX130 is self-adjusting. You never have to make a manual adjustment to go from high noise to low noise or back again. There are no instructions in this manual for adjusting VOX!
- ◆ Second, VOX130 is not sensitive to ordinary machine noise, no matter how loud it gets. Only your voice will cause your transmitter to activate. The louder the noise around you, the louder you must talk. That's to ensure that your voice is always much louder than the outside noise, so you'll always be easy to understand on your network.
- ◆ Third, while you're using VOX130, the transmitter automatically suppresses the outside, environmental noise so your voice will always be sharp, clear and easy to hear.

II SETUP

As received, your new Earmark Series 4C Headset is ready for use in a typical, industrial operating environment. Only a few items require your attention before you start operations.

A. BATTERIES

1. Alkaline Batteries

Earmark Headsets operate with either one or two, 9 volt, alkaline batteries (NEDA 1604A). Two batteries will last twice as long as one. If you use two batteries, change them both at the same time. To install your batteries, gradually loosen the knurled nuts on each side of the Battery Cover Plates and lift off the Plates. Press the batteries into the battery compartments. Do not force the batteries. Observe the polarity guide and they should fit easily. *Please do not attempt to use Zinc-Carbon batteries in your Earmark Headset. You will not be satisfied with the results.*

2. Rechargeable Batteries

Earmark offers two alternatives to alkaline batteries. Standard, commercial, 8.4 volt NiMH cells (Earmark Part No. 12019) comprise the first alternative. These cells look like 9V alkaline cells and are direct replacements for the alkaline batteries. No special Headset modifications are necessary. **PLEASE NOTE:** The standard, commercial NiMH system is not Intrinsically Safe.

The second alternative, the **Earmark RPS** (Rechargeable Power System), is a high capacity, Intrinsically Safe rechargeable battery system. This NiCd cell is larger than the commercial system because of the special provisions necessary to ensure Intrinsic Safety. Because of its extra size, the RPS requires special attention during initial installation.

EARMARK SERVICE POLICY

Earmark is proud to produce a quality, rugged product that is designed for use in tough industrial environments. The true sign of a company committed to excellence is shown by the commitment to product design AND customer service. At Earmark, we have gone one step further by ensuring that the experience that we gain in service is used in designing all of our products, making our products excellent for use in tough environments. But ultimately, all products require some level of service, especially after hard use and long periods of active use.

At Earmark, we are committed to making your service experience painless. We provide two levels of service with every product that we ship:

Phone Support

You can always call Earmark for help with an operational problem. Just dial our toll free number 1-888-EARMARK (USA only) or our direct number and ask to speak to our service department. Whether you have difficulty with your initial installation or have noticed a change in your equipment's performance, it is very likely that we can diagnose and hopefully fix the problem over the phone.

Repair

In the event that service is required for your Earmark product, we ask that you follow this simple procedure:

1. Pack the product in a rugged cardboard container. We recommend that headsets be sent to us in their plastic carrying cases for protection.
2. In the package include a piece of paper that has at the very least your contact information (contact name, phone/#, company name, shipping address), a problem description, and special shipping instructions, if desired (we ship FedEx 3-day if not specified)
3. Ship the container to Earmark – Attn: Service, 1125 Dixwell Ave, Hamden, CT 06514 USA.
4. While not required, we recommend that you also fax the paper to 203-777-2886 so that we can be prepared to receive your equipment.

All repairs are handled at Earmark equally – whether they are in or out of warranty. Once your equipment is checked in and inspected by our technicians you will be contacted by our service department with an estimate of parts and labor (if out of warranty) and an estimated ship date. In the event that any charges are incurred, you will also be asked for payment information (credit card, prepayment, or purchase order).

Warranty

All warranty work will be shipped back to you in the same timeframe that it was sent to us. For instance, if you sent your repair work using a 2-day carrier then it will be shipped back 2-day (we will only use FedEx, however). If you are unsure whether your equipment is still under warranty, please read the next page or call our service department.

We hope that you enjoy using your Earmark product. As always, we look forward to your comments and suggestions. Please feel free to contact us by phone, fax, or on the web.

SPECIFICATIONS

GENERAL

Performance specifications are nominal unless otherwise specified and are subject to change without notice.

General Frequency Range	72-76 MHz Std. (Other frequencies are available by special request.)
Operation mode	Simplex, Duplex or Repeating (model specific)
Power Supply	9V Alkaline Battery, NEDA 1604A or Earmark RPS
Weight (excluding batteries)	Approximately 26 Oz.
System hum and noise	-50 dB
Microphone	Electret, 10 kOhm

TRANSMITTER

RF Output	100 mW, 50 Ohm
Spurious & Harmonics	75 dB
Modulation	16K0F3E
Frequency Stability	0.005% @ (-30 C° to +50 C°)
Voice Compressor	Attack, <1 ms; Decay, 130 ms
VOX Threshold	6 dB below full modulation
VOX Characteristics	Attack, <1 ms; Delay, 750 ms
Current Draw	45 mA, ON; 3 mA, standby (VOX)

RECEIVER

Receiver Circuit	Dual conversion, 1st IF Frequency 10.7 MHz, 4 Pole Quartz Filter; 2nd IF 455 kHz, 4 Pole Ceramic Filter
Sensitivity	0.4 uV for 12 dB quieting
Modulation Acceptance	20 kHz
Selectivity	-55 dB @ 40 kHz from center frequency
Spurious & Image	-47 dB
Intermod Response	-70 dB
Frequency Stability	0.005% @ (-30 C° to +50 C°)
Current Draw	10 mA

APPROVALS AND AUTHORIZATIONS

FEDERAL COMMUNICATIONS COMMISSION

All Headsets have been type accepted and certificated by the FCC for operation in Part 90 (Private Land Mobile Services) in the 72-76 MHz band. All transmitters, including Repeater Stations operate in the 72-76 MHz band with a power of 100 mW and modulation characteristics 16K0F3E. Type approval numbers are located on each unit. **FCC rules require licensing by the purchaser. Requests for application forms or information may be obtained from the FCC, Gettysburg, PA 17325.**

UNDERWRITER'S LABORATORY LISTING

EARMARK Communication Headsets are UL listed for Intrinsic Safety as follows:

Series 4 & 4W	Class I, Division I, Group C & D; Non-Incendive: Class I, Div. 2, Gr. A, B, C and D
Series 4W	Class II, Group E, F & G; Class III.

INSTALLING THE EARMARK RPS

To install the Earmark Rechargeable Power System, loosen the two knurled nuts and lift off the Battery Cover Plates on either side of the Headset. Install the Battery Box Extenders by threading them onto the exposed screws on each side of each Battery Box. Insert the Rechargeable Power Packs and secure them with the New Battery Cover Plates.

Your Headset will function equally well with either the alkaline batteries or the Earmark Rechargeable Power Systems. The only difference will be the time available between battery changes. The following chart shows the APPROXIMATE operating times you may expect from various models and battery combinations.

MODE	Power Condition	9V Alkaline	8.4V (NiMh) Rechargeable	EARMARK RPS (NiCd)
Continuous Live Mic	HI	18	4.5	9
	LO	25	6.0	12
Push-to-talk	HI	60	14	28
	LO	84	20	40

B. COMFORT FEATURES

1. Vertical Stabilizer Strap

The Earmark Series 4C Headset is most comfortable when worn with the Vertical Stabilizer Strap. The wide strap distributes the Headset's weight over the greatest possible area and guarantees optimum comfort. You can move the Headband Pad from the Headband onto the Vertical Stabilizer Strap for even more comfort. Set the strap so the top of your ear just clears the inside of the earmuff. Lock it in place with the buckle. This setting will also provide good clearance for your shoulder, under the muff.

2. Back Support Strap

Adjust the Back Support Strap so that it fits gently against the back of the head and prevents the Headset from falling forward when you bend over.

C. EARMUFFS

Your Earmark Headset comes with hypo-allergenic, noise cancelling earmuffs. These are special earmuffs for your Series 4C Headset. They are fabricated of polyurethane and are exceptionally durable.

If you are using the NVM (no visible microphone), please read the following:

The transmitter earmuff contains the microphone. You can feel it at the bottom of the earmuff surface. Putting other earmuffs or cooling devices on the Headset will cause a reduction in your overall transmission quality. If you want to use a moisture absorbing pad over the earmuff, cut out the piece of the pad that covers the microphone.

D. SQUELCH

Squelch is a receiver adjustment that determines how much RF signal is necessary before your radio receiver will open. If squelch is wide open, you will hear all the random atmospheric in the form of a loud, annoying, background hiss. If squelch is set too tight and isn't sensitive enough, you will reduce the effective range of your Earmark radios. Squelch is preset at the factory and should rarely need adjustment. If it does require readjustment, for any reason, contact Earmark.

III THE MICROPHONE ASSEMBLY

Getting the most from your Boom Microphone requires using it properly.

The Boom Microphone is flexible and adjusts to accommodate any normal positioning. To preserve the microphone's flexibility, always bend it gently and let it form its own curve. Do not kink the boom or attempt to force it into a sharp angle. Damage may result from abuse.

Position the microphone approximately 1/4 inch away from your lips. "Close talking" the mic, by keeping it tight to your lips, makes using VOX easier and assures you will always get maximum advantage from the mic's noise cancelling design. Keep the red side of the mic toward your mouth. If the mic gets turned around, you'll lose many of the mic's features.

The windscreen provides two advantages. First, the windscreen absorbs wind and breathing noises so these noises aren't very loud when heard over the radio. Second, they help keep the microphone capsule clean. Windscreens can be removed and cleaned or replaced. Clean with ordinary soap and water; rinse thoroughly and allow to dry before replacing. Spare windscreens are available from Earmark.

IV CONTROLS AND OPERATION

A. ON/OFF VOLUME SWITCH

This switch turns the Headset ON and provides a continuous volume control, from min to max. Located behind the receiver earcup, the switch is easy to find and large enough to control with a gloved hand.

B. BATTERY CONDITION INDICATOR LIGHT

The red light on the back of the receiver battery box is an indicator of battery condition, the brighter the light the stronger the batteries. When the light fades to a pale red, it is time to change the battery(s). If the light goes out completely, you have very little operating time remaining.

C. MODE CONTROL

The Mode Control is beneath the transmitter battery box. This switch selects the two operating modes, "VOX ON" or "VOX OFF". **Duplex, Repeater and Repeating Headsets** offer a selection of "Continuous Transmit (VOX OFF)" and "VOX with PTT override (VOX ON)". In the "VOX OFF" mode everything you say is picked up by the microphone and transmitted into your network. In other words, you are transmitting all the time. In VOX you only transmit your voice when you speak loudly enough to trip the VOX setting or push the PTT (Push To Talk) button switch on the back of the cup.

Simplex and Half-Duplex Headsets offer a selection of PTT (Push-to-Talk) or VOX. To operate in the PTT mode, switch VOX to the off position and press the button switch on the back of the cup. To operate in the VOX mode, switch to the "VOX ON" position and speak loudly enough to trip the VOX setting. Remember in Simplex you will not be able to hear anything said by another person on your network while the PTT switch or VOX is activated. So, remember to release the PTT switch when you have finished speaking.

V ACCESSORIES

A. HARD HAT MOUNTS

If you need a hard hat, you should equip your Series 4C Headset with Earmark's hard hat and hard hat brackets. Supplied as a package, the wide hard hat with ratchet suspension and the spring mount headset adapters assure the best fit and comfort. Contact Earmark for further information.

B. RECHARGEABLE POWER SYSTEMS

Rechargeable battery systems are available for the Series 4C Headsets (see Section II). Contact Earmark for further information.

C. REPLACEMENT PARTS

From time to time all devices need refreshing, especially soft parts such as headband pads, windscreens, and earmuffs. Replacement parts are available from your local Earmark Distributor or from Earmark. Please specify your Headset model when ordering.