Lotek

Ultimate Lite Single Stage VHF Transmitters

USER MANUAL

REVISION 07

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#MVHF08

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1. Introduction

Congratulations on the purchase of your Ultimate Lite VHF transmitter from Lotek. We have taken the time to create this guide to get you up and running with your Ultimate Lite VHF transmitters as quickly as possible. We welcome your feedback and look forward to assisting you with your future tracking requirements.

2. Operation

2.1. Initial Receipt

Lotek recommends that you confirm on receipt of the transmitters that they are all operating and on their correct frequency. We take pride in delivering a quality product and customer confirmation of operation on receipt allows us to assure that damage in transit is rectified immediately. We presume, unless we hear within 7 days of delivery of the product, that the checks detailed later in this guide have passed.

NOTE: All transmitters are shipped from Lotek tested and turned off with magnets secured to the transmitters and individually packaged to avoid transmitters being accidentally turned on during shipping and storage.

IMPORTANT: Ultimate Lite Single Stage Transmitters have a short battery life in order to be light weight. It is therefore CRITICAL to ensure that they are turned OFF when not needed for tracking. Be careful to keep the magnets on the transmitters and the transmitters separated during storage to assure maximum deployment transmitter life.

2.2. Conformation of Operation Checks

All transmitters are packaged with a magnet secured to them. The magnet when next to the transmitter turns the transmitter OFF. Removing the magnet turns the transmitter ON. To confirm operation on receipt of your transmitters:

1. Remove the transmitters from their packaging making sure the magnet remains attached to the transmitter.
2. Tune a receiver to the frequency printed on the label of the transmitter.
3. Remove the magnet from the transmitter and place aside (away from other transmitters). You should hear pulses. Vary the fine tune knob to optimize the pitch of the pulses and record this frequency for future use when tracking.
4. The receiver will pulse at the transmitters programmed pulse rate.
5. Turn the transmitter off by reattaching the magnet to the transmitter securely using tape or another method. Check that the receiver is silent (confirm this or you will lose battery life).

If the transmitters are going to be stored before deployment, make sure you TAPE THE MAGNET TO THE TRANSMITTER SECURELY. Single Stage transmitters with magnets on them should be stored so that the magnetic fields of the magnets do not interact and weaken, allowing the devices to turn on.
KEEP EACH TRANSMITTER AND MAGNET PAIR SEPARATED FROM OTHER TRANSMITTERS when storing to achieve this.

2.3. Deployment

1. Ensure local ethics approved and permits are in place before capturing study animals.
2. Remove the magnet and check the transmitter is functional by tuning the receiver to the frequency on the label or the frequency you recorded when when the transmitters were checked upon receipt.
3. Check for pulses and adjust the fine tune control to get a clear sharp pitch. Make note of the fine tune offset for each transmitter.
4. Attach the transmitter to the animal.

For optimal tracking we recommend using earphones where ever possible with your receiver.

3. Ultimate Lite Single Stage VHF transmitter options

3.1. Standard transmitters

Lotek's Ultimate Lite transmitters are our lightweight option for radio tracking small animals. The life and weight of the final package is determined by the cell, the type and length of antenna and its final design as either a Collar, Harness, Implant, Leg-Band or Glue-On package.

All Ultimate Lite transmitters are packaged with a label identifying the nominal frequency of the transmitter (eg. 160.350MHz).

3.1.1. Collars

The pictures below are a typical cable tie collar with whip antenna & a brass loop collar.

Transmitter on Cable Tie Collar

Transmitter on Brass Loop Collar

IMPORTANT: Ultimate Lite Transmitter collars that are closed with a nylon nut and bolt should have a drop of superglue applied to the nut and thread after tightening. Alternatively melt the nut/thread junction with a soldering iron. Refer to the VHF Collars User Guide for a note regarding the thread.

3.1.2. Harnesses

The picture below is a typical harness transmitter with whip antenna. The harness material is supplied by the user to attach the transmitter to the required body part of the study species, including tail mounts for birds.

Harness Transmitter

3.1.3. Implants

They are intended as either subcutaneous or peritoneal (deep tissue) implants. The picture below is a typical implant package with a loop antenna.

Implant Transmitter

3.1.4. Leg-Band

The picture below is a typical leg-band with a whip antenna and a band for attaching to the leg of the bird.

Leg-Band Transmitter

3.1.5. Glue On

The picture below is a typical glue on transmitter with a whip antenna.

Glue on Transmitter

3.2. Frequency Range

142MHz to 174MHz. Special frequencies are available on request.

3.3. Temperature Variants

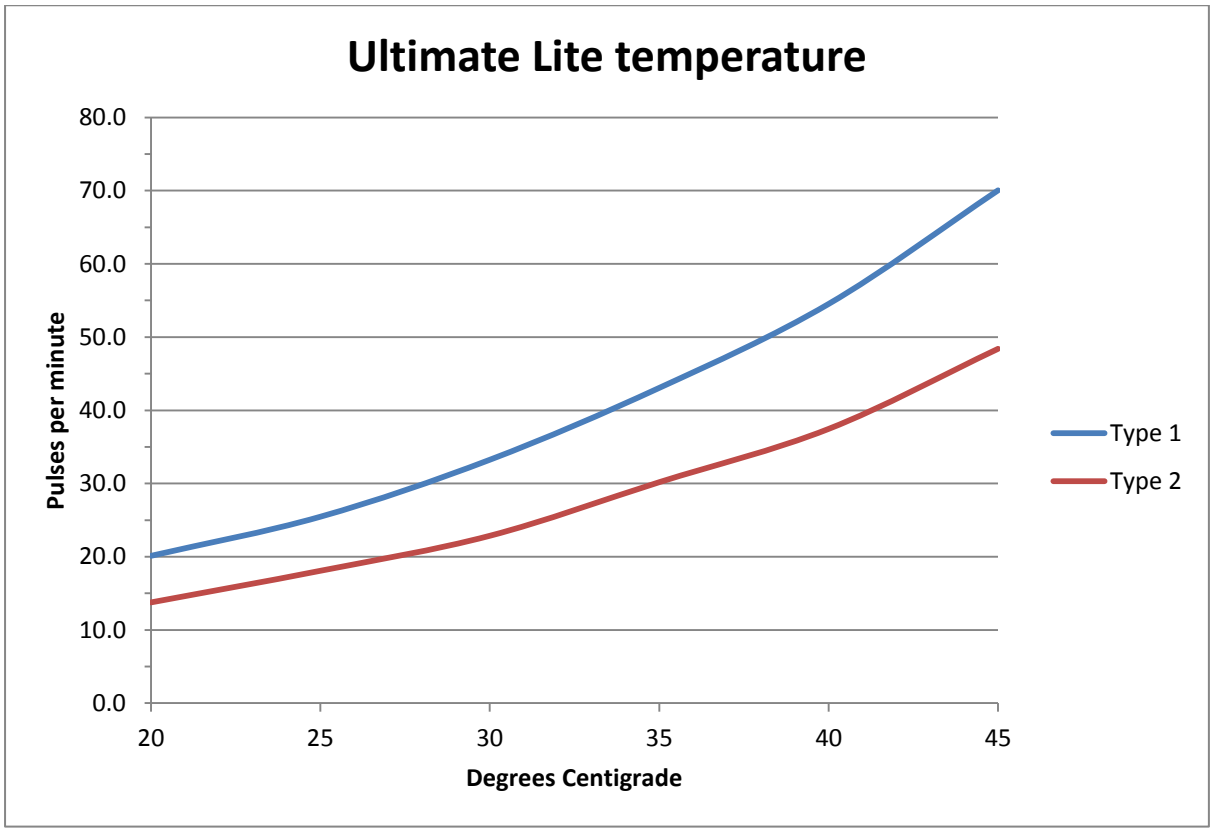
There are two variants of Ultimate Lite transmitter with a temperature sensor to measure body or ambient temperatures. The temperature sensor does not increase the weight of the transmitter. The pulse rate and therefore the operational life of the transmitter varies with the temperature.
Both variants can be operated from 20°C to 45°C but are optimised for different sections of this range.

Type 1: Approx. 20 pulses per minute at 20°C to Approx. 40 pulses per minute at 35°C – for use with cold blooded animals
Type 2: Approx. 20 pulses per minute at 27°C to Approx. 40 pulses per minute at 42°C – for use with mammals.

Each transmitter with a temperature sensor must be calibrated at temperatures across the range prior to deployment. One method of calibrating temperature would be to use a bowl of water and a thermometer.

- Starting with cold water from a tap/fawcett, add warm water until the temperature reads 20°C or 27°C (Type 1 or 2).
- Place transmitter(s) in the water with the antenna out of the water. Ensure the transmitter is on (i.e. magnet removed).
- Tune your receiver to the label frequency on the transmitter(s) in turn and record the number of pulses of each transmitter. Be sure to check the temperature of the water and ensure it remains at Approx. 20°C or 27°C.
- Slowly add warm water to the bowl to increase the temperature in steps of say 3°C to 5°C. Record the new temperature and the number of pulses for each transmitter at the new temperature. Repeat this process until the full temperature range of the transmitter(s) sensor has been covered.
- The data can be tabulated or graphed (as below) for future reference.

Using such a graph, one can determine the temperature of the transmitter in the field by translating received pulse rates to a temperature.



Graph showing the typical temperature versus pulse rates for the two versions of Ultimate Lite temperature transmitters.

NOTE: The above graph is indicative only and MUST NOT be used for your deployments. For accurate results each transmitter must be individually calibrated with its own temperature vs pulse rate graph prior to deployment. Please contact Lotek if you require assistance.