INSTRUCTIONS MANUAL

1. INTRODUCTION

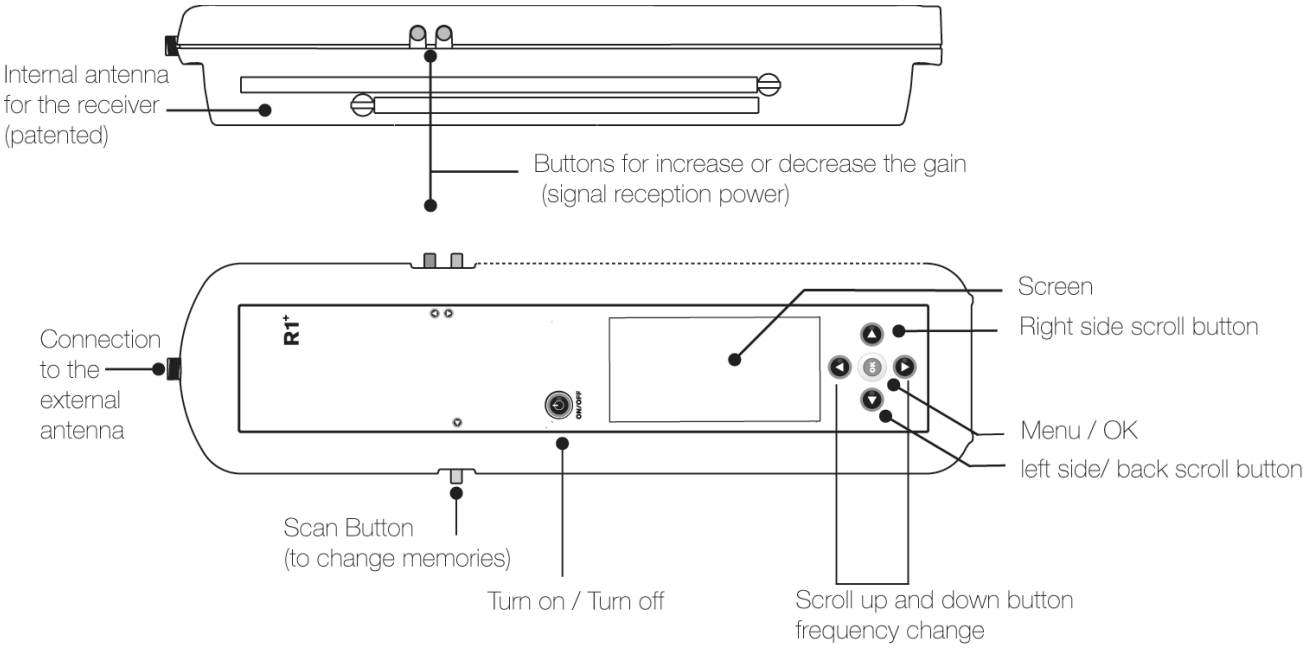
This manual provides instructions for the operation of your new R1+ digital receiver and an explanation of the technique of radio tracking.

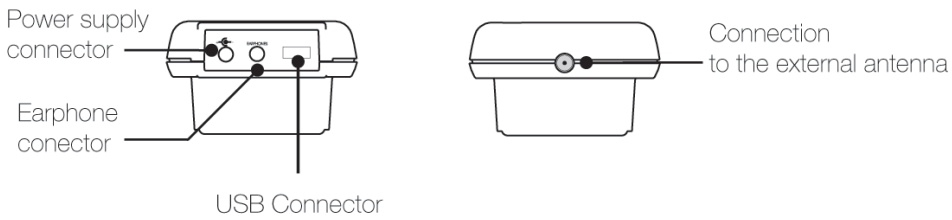
The receiver is very simple to operate by using a menu to select different options in a similar way to a cell phone.

Thanks to its small size, light weight and ergonomics, the search can be done even with only one hand.

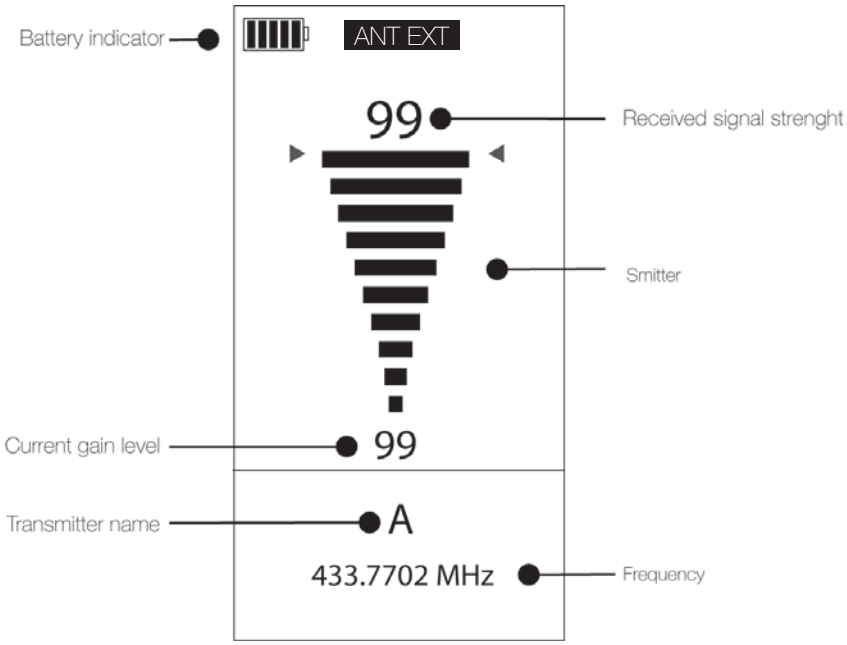
- ✓ The receiver incorporates a small folding antenna on one side although, if necessary, it may be connected to an outside antenna with more gain.
- ✓ The receiver includes a light sensor to illuminate the screen when day light is insufficient.
- ✓ It operates on normal batteries, so that if the batteries become flat while in the field it is not necessary to recharge them for hours.
- ✓ A frequency search consists of pressing a single button, making manual tuning unnecessary. This innovation means that the signal sent by the transmitter is received at the ideal frequency.
- ✓ It offers improved features, with less background noise, more sensitivity and better discrimination. All this means there is a considerable increase in the operating range.
- ✓ It covers a wide range of frequencies thus enabling it to work with a higher number of transmitters and reducing the probability of one interfering with the other (3,790 channels).
- ✓ It allows to save up to 100 transmitters.
- ✓ Each receiver includes:
  A practical belt-mounted pouch
  4 alcaline batteries

2. PARTS OF THE RECEIVER





3. SEARCH SCREEN



4. START

For switching ***"ON"/"OFF"*** the receiver, press during 3 seconds the button

4.1 STORE A TRANSMITTER IN THE RECEIVER MEMORY

Press OK , you will find the option "Transmitters", confirm it pressing OK, then confirm the option "add" pressing OK again.
In the following screen we should introduce the transmitter frequency.
The receiver will show by default the first two digits of the frequency (43_._ _MHz). These two first digits will remain the same.
Use the lateral keys to select the digits corresponding the full frequency which appears in the transmitter. Confirm each digit pressing OK (ex: 433.150 MHz).
Once the frequency has been introduced, confirm pressing OK and follow the steps as appear in the screen to calibrate the transmitter.

When the calibration is finished, in the screen will appear ***" TRANSMITTER ADDED"***, press OK to enter name ". Now you need to introduce the name assigned to the transmitter: Use the keys to browse through and select every single letter on the screen , pressing OK to save.

If you need to help other users in their searches and the transmitter is not available for an automatic calibration, you must introduce manually the frequency.

5. SEARCH PATTERN

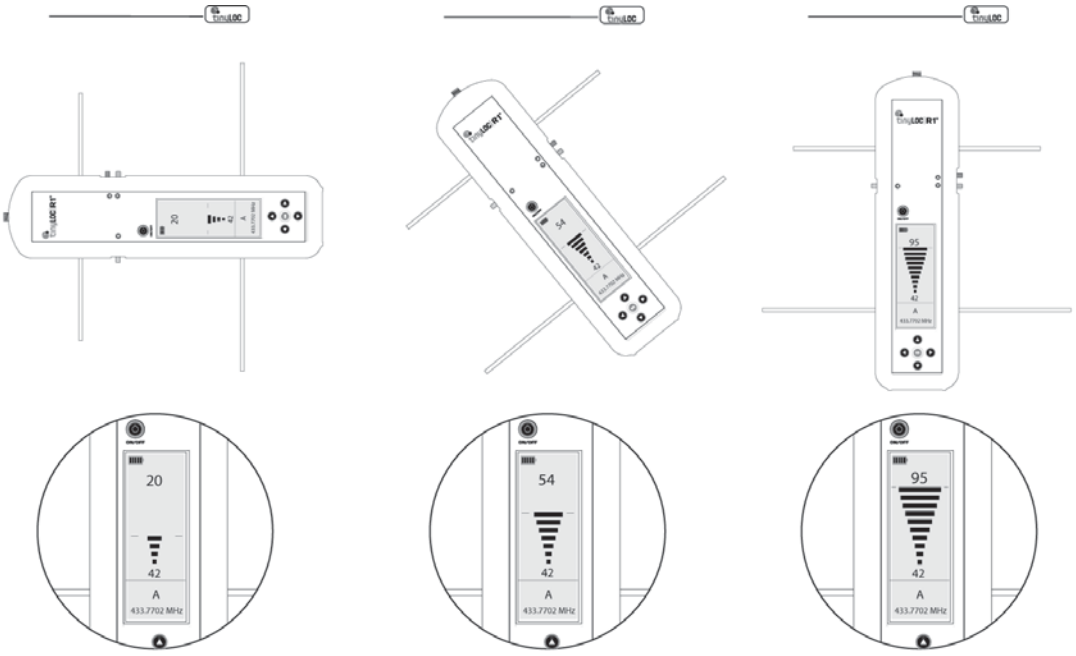
Place the transmitter on the target to be followed and you will be ready to start radio tracking searching.

When the transmitter has been recorded in the receiver and calibrated, go to “search” screen. On the bottom of the screen will appear the name and frequency of the transmitter we are searching. Please ensure it is effectively the transmitter you want to track.

Each signal pulse from the transmitter is received audibly through the loudspeaker and visually on the smitter bar. At more gain more signal will be received. Therefore, begin at the maximum level to receive the first signals from the transmitter.

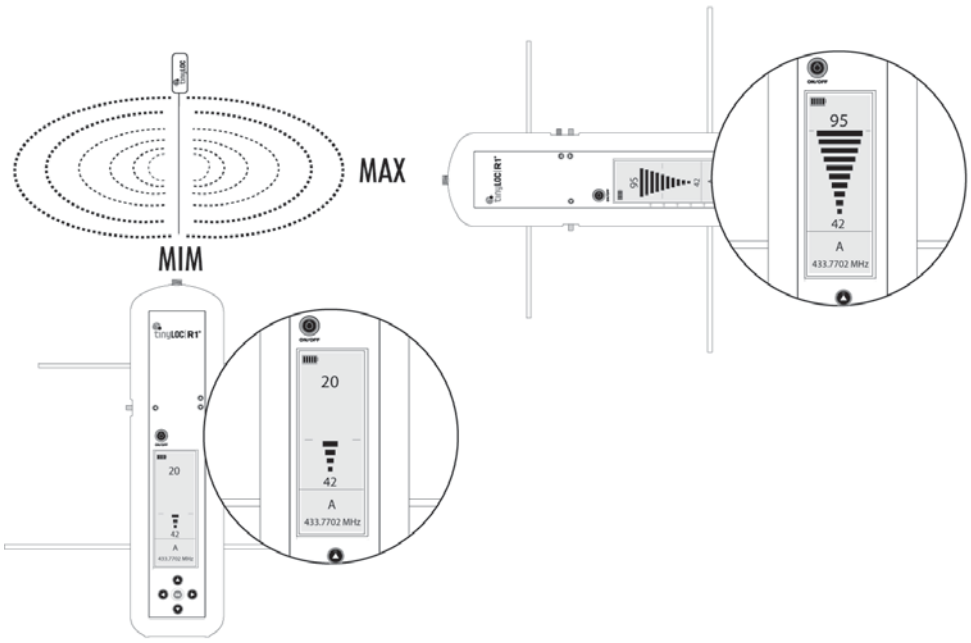
When you approximate the target, the level of signal will increase. When the level increases, reduce the value of the gain. The smitter should be always about half of the scale. Use the visual scale marks below the screen as a guide. If the signal increases on getting closer to the transmitter, reduce the gain to return it to half the smitter scale.

The numerical value will be displayed on the top of the screen (values between 0 to 99), it will be updated when we change the gain and when the signal of the transmitter is received.
This system is very useful to compare the intensity of the signal coming from different directions.



5.1 RADIO TRACKING

Radio tracking system allows the user to locate the target and to recover it even if the distance is upper few tens of kilometers. The transmitters can be placed in animals, people, objects to have control over its position. The expansion of the radiation signal is generated along the antenna as shown in the design below.



For maximum signal reception the receiver should be oriented so that the antenna must be to that of the transmitter. Once the frequency is tuned it is possible to begin radio tracking.
Turn around 360º to find out which is the correct direction; you will notice a stronger signal level.

Please remember:

- The correct way to use the receiver is to place it horizontally on the palm of the hand and hold it with the fingers (Figure A).
- Don´t touch the antennas when holding the unit.
- Make sure the correct antenna has been selected. You would be using the internal antenna when the option corresponds to the antenna fitted on the receiver. The external antenna is an optional device that must be added.
- Keep in mind that the target is in movement, therefore the transmitter position might experience variations depending on that factor. The correct way to make the search will be as shown in Figure B.

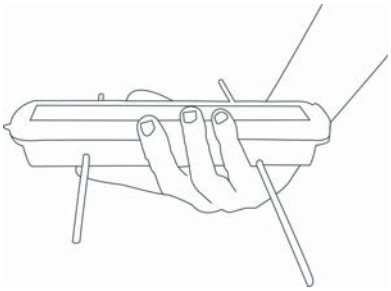


Figure A

- Increase the gain as much as possible and scan with the receiver held flat and turning 360º to receive the first signal pulses.

- Start increasing the gain as much as possible and scan with the receiver held flat and turning 360º to receive the first signal pulses. If the signal level is the same in all the directions reduce the gain to half the smitter bar. If necessary, readjust the gain level and repeat the scan to verify that the correct direction is being followed. And so on successively until finding the transmitter.

- The transmitter antenna may be positioned vertically, horizontally or inclined to the receiver antenna. This is why it is important to move the receiver antenna in all directions: horizontal, vertical and inclined. (See figure B)

- The R1^{+} must be behind the users body (otherwise, the radio tracking mode would not be able to distinguish between incoming signals from the front and the back).

- The range of the receiver is much greater if you track from hills or other elevated areas. Even something as simple as lifting it above your head may be enough to add several kilometers to its range. (See figure C)

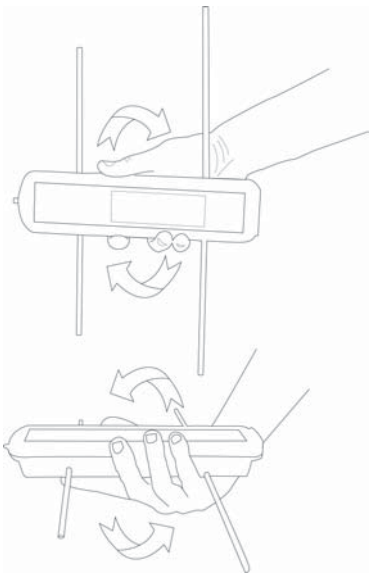


Figure B

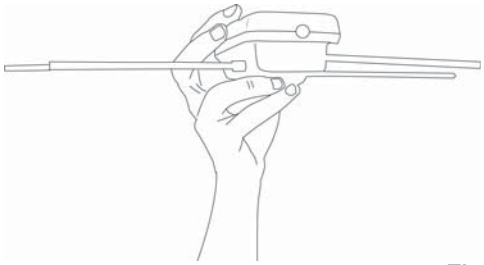


Figure C

6. IMPORTANT INFORMATION

Transmitters do not have their complete frequency printed on the label (for example 433.4560 MHz), but an abbreviation.
In the example 3,456 MHz: number 3 indicates the last digit of the 433 frequency range. Neither is the last digit recorded as it varies according to environmental conditions; it is automatically adjusted when executing the function test for automatic calibration. This enables searching with greater precision.

The TinyLoc R1^{+} receiver covers a larger range of frequencies to work with a greater number of transmitters (3,790) without so much probability of no interference between them. (432.0000 and 434.7900 MHz).
Up to 100 transmitters could be stored in the memory.
Use the same procedure to edit the memory or delete it, if necessary.If the memory is full, a warning message will be displayed.

6.1. TEST (AUTOMATIC CALIBRATION OF A TRANSMITTER FREQUENCY)

Be aware that the transmitter frequency may suffer variations due to temperature and environmental changes. Therefore we advise you to make a calibration after long time of no use or change of season (winter/summer).

The function “Calibration” has been designed

This patented function test automatically and precisely calibrates the unit by scanning a bandwidth of 3 KHz, on both sides of the central frequency written on the transmitter being tuned, thus ensuring good tuning even though transmitter has deviated by up to 3 KHz.
It is important during the execution of this function, to be at least 5 metres away from any source of radiofrequency (other transmitters, mobile telephones, electricity grids, cars, etc.) to prevent interference problems.
Even if we don´t have the transmitter we can do the adjustment from the searching screen. With the keys ▲ ▼ frequency could be increased/decreased digit by digit (100 Hz by 100 Hz) to the exact point of maximum reception.

We advise you to make the ***“TEST”*** outdoors with environmental conditions as similar as possible to the conditions you find when you operate the device to avoid changes on the frequency.

6.2 INTERNAL AND EXTERNAL ANTENNA

To guarantee the usability of the receiver it is absolutely necessary to select the correct antenna. Usually the receiver works with the internal antenna. If you fit an external antenna (car for example) you must change the option. To do it, press OK (to access the MENU), select the option ***“ANTENA”*** and confirm pressing OK
Next screen will show the antenna that is currently working, to change it select “***YES***” and confirm pressing OK.
In the searching screen will appear the selected option which is working: **ANT EXT**

6.3. CHAGING BATTERIES AND EXTERNAL POWER SUPPLY

The receiver is powered by 4 AA 1.5 V batteries (LR6).
The receiver must be turned off when changing the batteries. Remove the 2 screws from the base of the receiver and raise the cover.

This provides access to the battery compartment. First insert one battery in the correct direction and then push it so that it slides along the guide to the back of the compartment. Then insert the next battery. Perform the same operation with the two remaining batteries. Make sure they are inserted correctly by following the diagram showing the direction of each one on the bottom the battery compartment.
Once the batteries are inserted, close the cover.

The receiver will maintain all the configuration it had before changing the batteries (memories, antenna selection, channel search, etc.).
It is also possible to connect an external power supply to the receiver from the vehicle power outlet using the special adaptor.

Do not use rechargeable batteries under 1.6 V.

NOTE: The receiver incorporates a battery level indicator which will show when to change the batteries. When the batteries are flat the transmitter will not be lost as simply replacing them enables the search to continue, thus avoiding the problem of not being able to use the receiver while the battery is being charged.

SPECIFICATIONS

Power source	6 volts (4 x LR6 “AA”). Not rechargeable ones under 1.6 V.
Receiver sensitivity	-145 dBm
Frequency range	UE /AUS/NZ (433.050-434.750 MHz) Model 410
Operating temperature	-15º to 50º C (5º to 122º F)
Storage temperature	-20º to 70º C (-4º to 158º F)
Index of protection	IP 20
Weight	520 g (1,15 lb) with batteries
Dimensions (antenna not extended)	245x66.5x40 mm (9.65x2.62x1.57 in)

This device is in compliance with the essential requirements and other relevant provisions of UE Directive 1999/5/CE.

CE