



# Automatic Loop Remote Tuner (CHA ALRT) Operator's Manual

Nevada - USA

[WWW.CHAMELEONANTENNA.COM](http://WWW.CHAMELEONANTENNA.COM)



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# Table of Contents

Introduction .....	3
Parts of the Automatic Loop Remote Tuner .....	3
Installation of the Automatic Loop Remote Tuner .....	4
SWR Sensing Unit Connection .....	4
Automatic Loop Remote Tuner Operation .....	5
Manual Tune .....	6
Automatic Tune.....	6
Battery Replacement .....	8
Troubleshooting.....	9
Preventive Maintenance.....	9
Specifications .....	9
Chameleon Antenna™ Products.....	10



WARNING! Never mount this, or any other antenna near power lines or utility wires! Any materials: ladders, ropes, or feedlines that contact power lines can conduct voltages that kill. Never trust insulation to protect you. Stay away from all power lines.



WARNING! Never operate this antenna where people could be subjected to high levels of RF exposure, especially above 10 watts or above 14 MHz. Never use this antenna near RF sensitive medical devices, such as pacemakers.



WARNING! A tuned loop can exhibit several hundred Volts and concentrated electromagnetic radiation when operating at QRP power levels (5-10 W). At higher RF levels, several thousand volts will be present at resonance! Exercise caution when using this antenna. Operate this antenna at your own risk.

Photographs and diagrams in this manual may vary slightly from current production units due to manufacturing changes that do not affect the form, fit, or function of the product.

All information on this product and the product itself is the property of and is proprietary to Chameleon Antenna™. Specifications are subject to change without prior notice.

## Introduction

Thank you for purchasing and using the Chameleon Antenna™ Automatic Remote Loop Tuner (CHA ALRT). This tuner is designed for remote automatic tuning of the CHA F-LOOP 2.0/3.0 magnetic loop antennas in place of the standard manual tuning knob. This permits the antenna to be up to 12 feet from the operating position, such as on a balcony or deck, and enables precise automatic tuning of the loop. The CHA ALRT will only work with the CHA F-LOOP 2.0 and 3.0. You must also have the CHA LRT kit for your particular F-LOOP. Please follow the instructions to properly connect and operate the Automatic Loop Remote Tuner.

## Parts of the Automatic Loop Remote Tuner

The CHA ALRT kit is comprised of the following components, see plate (1):

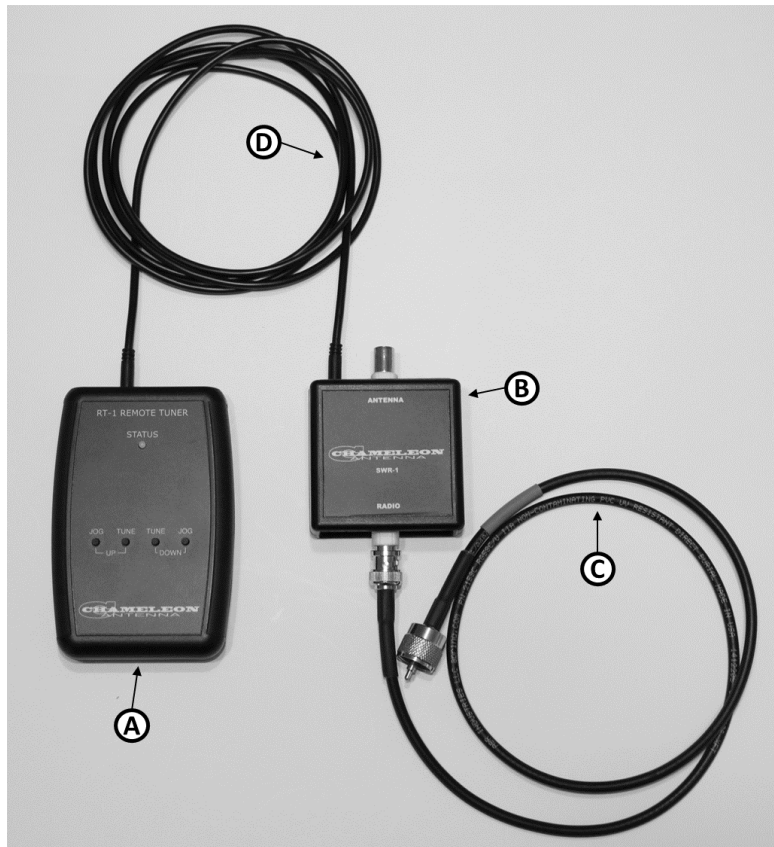


Plate 1. Components of the CHA ALRT Kit.

- A. Remote Tuning Unit** – The Remote Tuning Unit (RT-1) controls the rotation direction and speed of the electric motor which mechanically adjusts the resonant frequency of the CHA F-LOOP 2.0/3.0 antenna in place of the standard Tuning Knob.
- B. SWR Sensing Unit** – The SWR Sensing Unit (SWR-1) provides Standing Wave Ratio (SWR) data to the Remote Tuning Unit to enable automatic tuning of the CHA FLOOP 2.0/3.0.
- C. Short Coaxial Cable** – The Short Coaxial Cable is used to connect the SWR-1 to the HF transceiver.
- D. SWR Cable** – The SWR Cable connects the SWR-1 to the RT-1 to provide SWR data.

## Installation of the Automatic Loop Remote Tuner

Please use the following procedure to connect the CHA ALRT to your CHA F-LOOP 2.0/3.0. Note that the CHA ALRT will only work with the CHA F-LOOP 2.0 and 3.0. In addition to the supplied components (shown in plate [1]) you will need the Loop Remote Tuner (CHA LRT) kit, which contains the RT-1, Motor Assembly, bracket, screws, and cables.

See the following documentation, available at [www.chameleonantenna.com](http://www.chameleonantenna.com), for information on assembling and operating the CHA F-LOOP and CHA LRT.

- HF Portable Loop Antenna 2.0 (CHA F-LOOP 2.0) and (CHA F-LOOP 2.0 TOTAL) Operator's Manual
- HF Portable Loop Antenna 3.0 (CHA F-LOOP 3.0 Basic, Total, and Plus) Operator's Manual
- Loop Remote Tuner (CHA LRT) Operator's Manual

## SWR Sensing Unit Connection

The following steps detail how to connect the SWR Sensing Unit (SWR-1). Refer to figure (1) and plate (2).

1. Connect the RT-1 to the F-LOOP. See "Loop Remote Tuner (CHA LRT) Operator's Manual" for detailed installation instructions for installing the Loop Remote Tuner.
2. Connect one end of the Short Coaxial Cable (C) to the antenna jack of the HF transceiver.
3. Connect the other end of the Short Coaxial Cable to the "RADIO" jack of the SWR-1 (B).

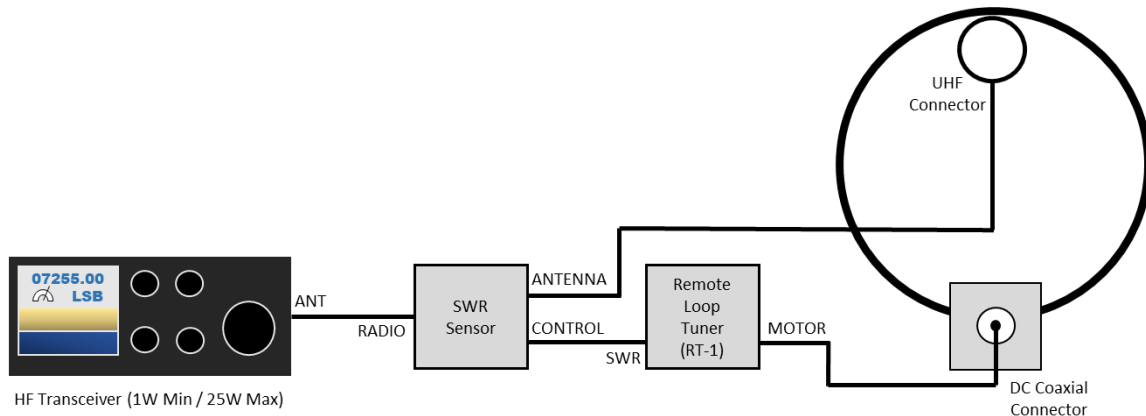


Figure 1. Automatic Loop Remote Tuner Connections.

4. Connect one end of the SWR Cable (D) to the "CONTROL" jack of the SWR-1.
5. Connect the other end of the SWR Cable to the "SWR" jack of the RT-1 (A).
6. Connect the end of the F-LOOP Coaxial Cable with the RF Choke to the UHF Connector on the Coupling Loop.
7. Connect the other end of the Coaxial Cable to the SWR-1 "ANTENNA" jack.

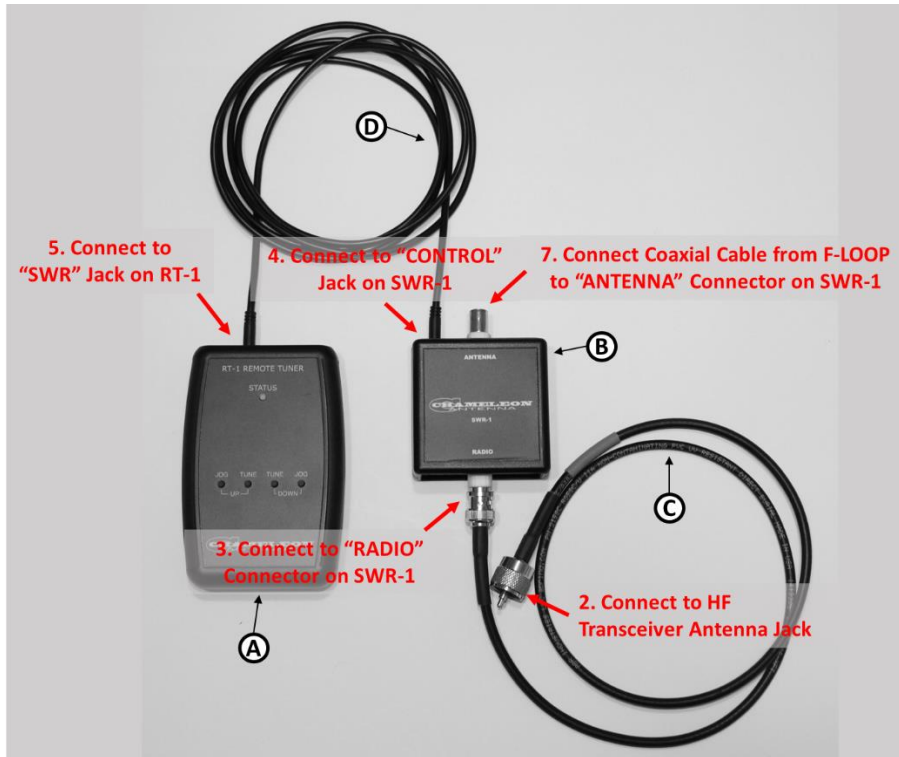


Plate 2. SWR-1 and RT-1 Connections.

### Automatic Loop Remote Tuner Operation

The Automatic Loop Remote Tuner is easy to use. See plate (3) and table (1) for an explanation of each control and connection on the Remote Tune Unit.



Plate 3. Remote Tuner Unit Controls and Connections Location.

## Manual Tune

The RT-1 can be used to manually remote tune the CHA F-LOOP 2.0/3.0. To manually tune the CHA F-LOOP 3.0, press the “**TUNE [UP]**” and “**TUNE [DOWN]**” buttons on the RT-1 until maximum signal strength is received. You will know when you are close to resonant frequency because there will be a marked increase in receiver background noise you will start hearing received signals. Press the “**JOG [UP]**” and “**JOG [DOWN]**” buttons to see which direction reduces the SWR. Continue pressing the single step button that initially reduced the SWR until SWR is at a minimum.

## Automatic Tune

The RT-1 and SWR-1, when used together, enable automatic remote tuning of the CHA F-LOOP 2.0/3.0.

### Enabling RT-1 Auto Tune

Before the RT-1 can be utilized for automatic tuning, that feature must be enabled. Follow these steps to enable the RT-1 Auto Tune feature.

1. Ensure a 9V battery is installed in the RT-1 and that the POWER Switch is turned “**OFF**”.
2. Press and Hold the “**JOG [DOWN]**” button.
3. Turn the POWER Switch “**ON**” while continuing to hold the “**JOG [DOWN]**” button until the Status Indicator LED turns RED.
4. Release the “**JOG [DOWN]**” button.

Label	Purpose
<b>POWER</b>	<ul style="list-style-type: none"><li>• Turns the Loop Remote Tuner <b>ON</b> or <b>OFF</b>.</li><li>• While holding the <b>JOG [DOWN]</b> button, turn <b>ON</b> to enable Auto Tune feature.</li><li>• While holding the <b>JOG [UP]</b> button, turn <b>ON</b> to reverse motor direction.</li></ul>
<b>MOTOR</b>	Jack for RTU Cable. Connects RT-1 to Motor Assembly
<b>SWR</b>	Jack for SWR Cable. Connects RT-1 to SWR-1
<b>SERIAL</b>	Not Used
<b>STATUS</b>	<ul style="list-style-type: none"><li>• LED slowly blinks <b>YELLOW</b> when <b>POWER</b> is turned <b>ON</b>.</li><li>• LED is lit <b>RED</b> when Auto Tune is in-progress and power level is below 1 Watt. Increase power to between 1 and 10 Watts.</li><li>• LED is lit <b>GREEN</b> when Auto Tune is in-progress.</li></ul>
<b>JOG [UP]</b>	<ul style="list-style-type: none"><li>• Raises/Increases the resonant frequency of the Loop Antenna by one step/increment.</li><li>• Press and hold to prepare for Auto Tune in the higher frequency direction.</li><li>• Press and hold while turning the <b>POWER ON</b> to reverse motor direction.</li></ul>
<b>TUNE [UP]</b>	<ul style="list-style-type: none"><li>• Raises/Increases resonant frequency of the Loop Antenna by many steps/increments.</li><li>• Tap (while pressing <b>JOG [UP]</b>) to begin Auto Tune in the higher frequency direction.</li></ul>
<b>TUNE [DOWN]</b>	<ul style="list-style-type: none"><li>• Lowers/Decreases the resonant frequency of the Loop Antenna by many steps/increments.</li><li>• Tap (while pressing <b>JOG [DOWN]</b>) to begin Auto Tune in the lower frequency direction.</li></ul>
<b>JOG [DOWN]</b>	<ul style="list-style-type: none"><li>• Lowers/Decreases the resonant frequency of the Loop Antenna by one step/increment.</li><li>• Press and hold to prepare for Auto Tune in the lower frequency direction.</li><li>• Press and hold while turning the <b>POWER ON</b> to enable Auto Tune feature.</li></ul>

**Table 1. Remote Tuner Unit Controls and Connection Description.**

## Performing Auto Tuning

Perform the following steps to automatically tune the F-LOOP 2.0/3.0, refer to figure (2).

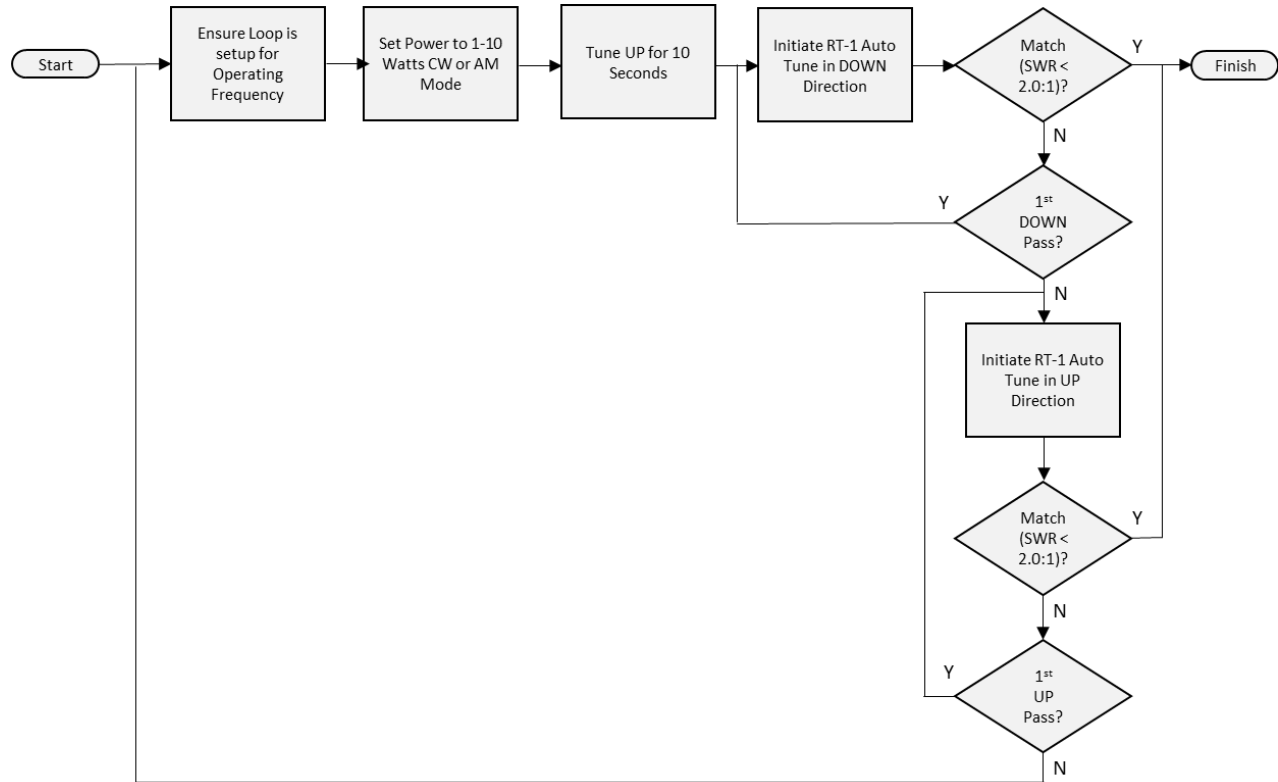


Figure 2. Auto Tuning Process.

1. **IMPORTANT:** Ensure the loop configuration and Band Switch position are correct for your operating frequency, as shown in table (2) of the “HF Portable Loop Antenna 3.0 (CHA F-LOOP 3.0 Basic, Total, and Plus) Operator’s Manual” or table (2) of the “HF Portable Loop Antenna 2.0 (CHA F-LOOP 2.0) and (CHA F-LOOP 2.0 TOTAL) Operator’s Manual”.

The Automatic Loop Remote Tuner cannot match a frequency outside the ranges shown in the table.

2. Set the power level of the transmitter to the lowest power setting available between 1 and 10 Watts.
3. Turn the RT-1 POWER Switch “ON”.

*Note: You can tune UP first instead of DOWN, if you think the match is more likely to be in the upward direction. Skip to step 11.*

4. Press the “TUNE [UP]” button for 10 seconds. *This step will make it more likely for a match to be found in the downward direction. Skip, if not necessary.*
5. Press and hold the “JOG [DOWN]” button.
6. Tap the “TUNE [DOWN]” button. The Status Indicator LED should light RED. If the Status Indicator does not light RED, perform the *Enabling RT-1 Auto Tune* procedure.

7. Release both buttons.
8. On a clear frequency, key the transmitter using a constant carrier, such as CW or AM. The Status Indicated should be lit a steady GREEN (if the Status Indicator remains RED, increase power slightly). The RT-1 will attempt to find a match on a lower frequency. The RT-1 will stop if a match is found. If a match is not found in 15 seconds, the unit will also stop.  
*Note: You can press any key on the RT-1 to abort automatic tuning that is in-progress.*
9. If a match was found (as indicated by an SWR of around 2:1 or less), go to step 17.  
*Note: If the RT-1 stops tuning before 15 seconds has elapsed, you can be sure it found a match.*
10. If a match was not found and the unit timed out (tried for 15 seconds), another pass at tuning in the same direction may be required, particularly if the last tuned frequency and new frequency are far apart. You can either go back to step 7 and tune again in the same direction or continue to the next step.
11. Press and hold the “**JOG [UP]**” button.
12. Tap the “**TUNE [UP]**” button. The Status Indicator LED should light RED.
13. Release both buttons.
14. On a clear frequency, key the transmitter using a constant carrier, such as CW or AM. The Status Indicated should be lit a steady GREEN (if the Status Indicator remains RED, increase power slightly). The RT-1 will attempt to find a match on a higher frequency. The RT-1 will stop when a match is found. If a match is not found in 15 seconds, the unit will also stop.  
*Note: You can press any key on the RT-1 to abort automatic tuning that is in-progress.*
15. If a match was found (as indicated by an SWR of around 2:1 or less), go to step 17.  
*Note: If the RT-1 stops tuning before 15 seconds has elapsed, you can be sure it found a match.*
16. If a match was not found and the unit timed out (tried for 15 seconds), another pass at tuning in the same direction may be required, particularly if the last tuned frequency and new frequency are far apart. You can either go back to step 11 and tune again in the same direction or retry the tuning procedure from step 1.
17. Although not normally needed, you can try to get a slightly lower SWR by using a tap or two of the “**JOG [UP]**” and “**JOG [DOWN]**” buttons.
18. Turn the RT-1 POWER Switch “**OFF**”.

## **Battery Replacement**

To replace the 9V battery in the RT-1 perform the following steps.

1. Press the ridged area on the battery cover and slide off the battery cover.
2. Pull the battery out of the holder.
3. Carefully disconnect the battery from the battery connector.
4. Replace the battery with a high-performance Alkaline or Lithium 9V battery.
5. Replace the battery cover.



## Troubleshooting

1. Replace the 9V battery.
2. Connect the RTU Cable to the RT-1 MOTOR connection and to the DC coaxial connector on the front of the Motor Assembly.
3. Press the “**TUNE [UP]**” and listen for motor noise.
4. Press the “**TUNE [DOWN]**” and listen for motor noise.
5. If you did not hear motor noise in either of the preceding two steps, contact us for technical support.
6. If the motor is tuning the loop downward in frequency when pushing the “**TUNE [UP]**” button or upward in frequency when pushing the “**TUNE [DOWN]**” button, turn the RT-1 **OFF**, Press and Hold the “**JOG [UP]**” button, and turn the RT-1 **ON**. This will reverse the direction of the motor.
7. Press and Hold the “**JOG [DOWN]**” button and Tap the “**TUNE [DOWN]**” button. The Status Indicator LED should light RED. If not, perform the Enabling RT-1 Auto Tune procedure.
8. Retry all steps in the *Performing Auto Tune* procedure. If unable to obtain a match in either direction, check all cable connections, position of the Band Switch, proximity of the loop to other objects, etc. Also, ensure the loop configuration and Band Switch are properly configured for your operating frequency using table (2) of the “HF Portable Loop Antenna 3.0 (CHA F-LOOP 3.0 Basic, Total, and Plus) Operator’s Manual”.
9. If still unable to obtain a match, contact us for technical support. Include the symptoms you are having and the steps taken to troubleshoot the problem.

## Preventive Maintenance

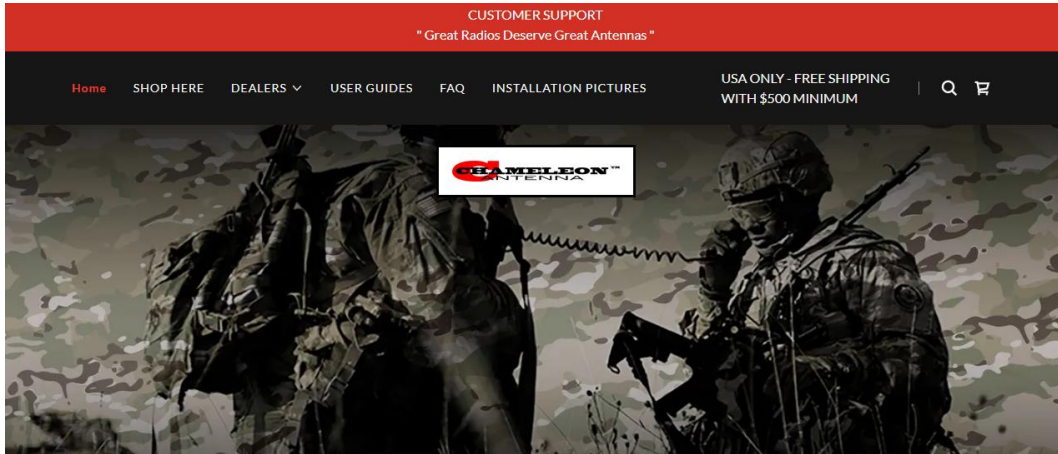
Remove the 9V battery if the Loop Remote Tuner is not going to be used for an extended period to prevent damage from battery leakage.

## Specifications

- Frequency: One Step/Increment (“**JOG [UP]**” or “**JOG [DOWN]**”), approximately 12 KHz at 15 MHz.
- Power: 9V DC internal replaceable battery.
- Tuning time: Less than 60 seconds, maximum (usually less than 15 seconds).
- Remote Operation: Maximum of 12 ft. from operating position with supplied cables.
- Dimensions: Remote Tuner Unit: 4 5/8 in. x 3 1/8 in. x 1 in. (H x W x D). Motor Assembly: projects 4 1/2 in. from Tuning Unit, 1 3/8 in. diameter.

## Chameleon Antenna™ Products

Please go to <http://chameleonantenna.com> for information about quality antenna products available for purchase from Chameleon Antenna™ – The Portable Antenna Pioneer.



THE PORTABLE ANTENNA PIONEER BECAUSE GREAT RADIOS  
DESERVE GREAT ANTENNAS

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GIGAPARTS  
WIMO  
MOONRAKER  
RADIOWORLD UK  
R&L ELECTRONICS  
ML&S MARTIN LYNCH  
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