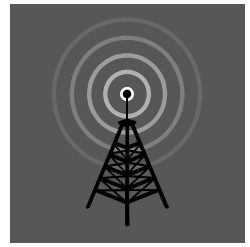


ALL BAND HF, VHF, UHF ACTIVE ANTENNA

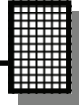


Ramsey Electronics Model No.

AA7B

Stuck for antenna space? Don't want to string any more wires? This ACTIVE ANTENNA KIT gives you roof-top performance on a desk top!

- **Great for perking up scanner reception.**
- **Circuit based on true active antenna research.**
- **Performance rivals units costing many times more!**
- **Front panel RF gain control.**
- **Uses Dual Gate MOSFET technology for low noise HF amplification.**
- **Includes telescopic whip antenna .**
- **Can be used with existing antenna.**
- **Clear, concise assembly instructions carefully guide you to a finished kit that works FIRST time!**
- **Informative manual answers questions on theory, hookups and uses - enhances resale value, too!**
- **Ideal companion to any Ramsey receiver.**
- **Power switch cuts the AA7B active antenna in and out of the antenna line with no need to change cables.**
- **Runs on a standard 9 volt battery or external power supply!**



PARTIAL LIST OF AVAILABLE KITS

RAMSEY TRANSMITTER KITS

- FM10C, FM25B FM Stereo Transmitters
- FM100B Super Pro FM Transmitter
- MR6 Model Rocket Tracking Transmitter
- AM1, AM25 AM Transmitters

RAMSEY RECEIVER KITS

- FR1 FM Broadcast Receiver
- AR1 Aircraft Band Receiver
- SR2 Shortwave Receiver
- SC1 Shortwave Converter

RAMSEY HOBBY KITS

- SG7 Personal Speed Radar
- SS70A Speech Scrambler
- TG1 DTMF Tone Grabber
- BS2 "Bullshooter" Digital Voice Storage Unit
- AVS10 Automatic Sequential Video Switcher
- WCT20 Cable Wizard Cable Tracer
- MD3 Microwave Motion Detector
- ML Music Lights Kit

RAMSEY AMATEUR RADIO KITS

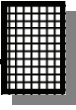
- HR Series HF All Mode Receivers
- QRP Series HF CW Transmitters
- CW7 CW Keyer
- QRP Power Amplifiers

RAMSEY MINI-KITS

Many other kits are available for hobby, school, scouts and just plain FUN. New kits are always under development. Write or call for our free Ramsey catalog.

AA7B ACTIVE ANTENNA KIT INSTRUCTION MANUAL
Ramsey Electronics publication No. MAA7B Rev 1.2a
First printing: October, 2006 This printing: December, 2008





KIT ASSEMBLY AND INSTRUCTION MANUAL FOR

AA7B ACTIVE ANTENNA KIT

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CIRCUIT DESCRIPTION

The AA7B is the next generation of our popular AA7. While the AA7 is a great product it has been around for a long time in relative terms of electronic equipment. Because of ever changing technology there comes a time when certain components are no longer produced and those still available are very expensive, which makes them unacceptable for our use. This was the case with the AA7, hence the AA7B was designed.

The basic idea of the AA7B is to make a small antenna, like the whip antenna supplied, act like a larger antenna, or an antenna with a gain factor. Put in simple terms, it is an amplifier which will amplify the very small radio frequency signals picked up by an antenna!

Let's take a look at the schematic diagram. We'll follow the signal from input to output to get a general idea how this kit works, and why.

The power supply

The power for your AA7B is supplied from either an external 9VDC to 20VDC power supply or an internal 9VDC battery. If an external supply is being used it will connect to the AA7B by its plug being inserted into Jack J3. The plug being installed causes the 'SW' terminal inside of J3 to disconnect from the 'RING' terminal. When this connection is broken the negative terminal of the 9 Volt battery is removed from the circuit, and power from the external supply will be connected to VR1. This is done to protect the battery from being damaged (i.e. blowing up, catching fire, etc) by applying power from an external source. NEVER attempt to charge a non-rechargeable battery. NEVER attempt to charge a rechargeable battery without the proper charging system. If the plug is removed from J3 the contact between 'SW' and 'RING' is reconnected and the battery power is reconnected to VR1. VR1 is a 5 volt regulator that provides clean regulated 5 volts to all the active devices in the AA7B. Capacitors C5 and C13 are filter capacitors and along with VR1 assure a clean DC supply. R11 limits the current used by power indicator LED D1 to less than 1mA.

Notice that the output of VR1 is connected to U2 Pin 14 even with the power switch (S1:B) in the off position. This is the power connection to U2 and is necessary because U1, U2, and U5 need power to operate properly even when the unit is off. BUT WAIT! Isn't the battery going to run down because there is still power being consumed? The amount of power required to operate VR1, the relays, and U2 is less than or equal to the amount of power to operate your watch. Since the capacity of a 9 volt battery is many times greater than a watch battery, if you turn off your AA7B and come back in a year you'll probably find it still working fine!

The amplifier

On the left side of the circuit you will see J1. This is where the receiving antenna is connected. The signal(s) picked up by the antenna are connected to U1 pin 5 through a .01uF coupling capacitor. This capacitor is necessary to isolate U1 from any DC levels that might be present at J1 and allow the AC, in this case RF signals, to enter the AA7B. U1 is an electronic relay. This device is really neat in that it performs like the old fashioned big mechanical relays of yester-year. This relay will switch signals from DC to over 3GHz very effectively. They are NOT a power relay capable of controlling large amounts of power -- instead it is used for very small levels, like the ones we are dealing with in the AA7B. You will notice that the symbol for U1 looks like a simple Single Pole Double Throw (SPDT) switch with a few other connections. Pins 4 and 6 are the control lines that control the relay and also supply operating power. These two pins are connected so that when one is in a low state the other is high. For example when pin 6 is high pin 4 is low and the signal is connected from pin 5 to pin 1. We'll talk more about this later. For now we'll assume this is the case and follow the signal through the AA7B.

From U1 pin 1 the signal goes through C3, another coupling capacitor, to Pin 4 of Q3. Q3 is an N-Channel MOSFET Tetrode transistor. If you're familiar with older components, it's just a solid state version of a tetrode vacuum tube. Pin 4, 'G1', is one of the gate terminals. The small ac voltage (signal) applied to this gate controls the large (compared to the input signal) current that flows from the source terminal, 'S', to drain terminal, 'D'. As the changing (AC) drain current flows through L1 and R7 a signal or voltage is developed that has the same characteristics as the gate signal except opposite phase and greater amplitude. That is how the device amplifies.

Pin 3, 'G2', is another gate and is between 'G1' and the 'D' to 'S.' By applying a DC level to 'G2' the amount of 'G1's' signal that is allowed to control the output current 'D' to 'S' is changed. Think of it as the volume control on your stereo. This control is provided by the voltage divider R2 (front panel Gain control), R3 and R4. When the user adjusts R2 so that the arrow, called a wiper, on R2 moves toward R3 the voltage applied to 'G2' is increased. Increasing the voltage on 'G2' allows more of the signal on G1 to control the output current increasing Q3's gain. By adjusting R2 so that the wiper moves toward R4 the voltage on 'G2' decreases, decreasing the gain of Q3. Notice that the voltage on R2's wiper is applied to Q3 through R5 and Q2 through R10. This allows the user to control the gain of both amplifiers simultaneously.

C7 is another coupling capacitor which couples the amplified signal from the drain terminal of Q3 to the 'G1' terminal of Q2. Looking at Q2 and the components around it you will see that it is almost identical to the Q3 circuit. The output signal from Q2's drain terminal is the amplified RF signal applied

to Q3 pin 4 from the antenna.

The last thing in the signal path is U5, another electronic relay like U1. The signal from Q2 is coupled to pin 1 of U5. For this discussion U5, like U1, is configured to connect pins 1 and 5 together and the signal connected through C12 to the output jack J2. This is the connection that goes to your receiver's antenna connection.

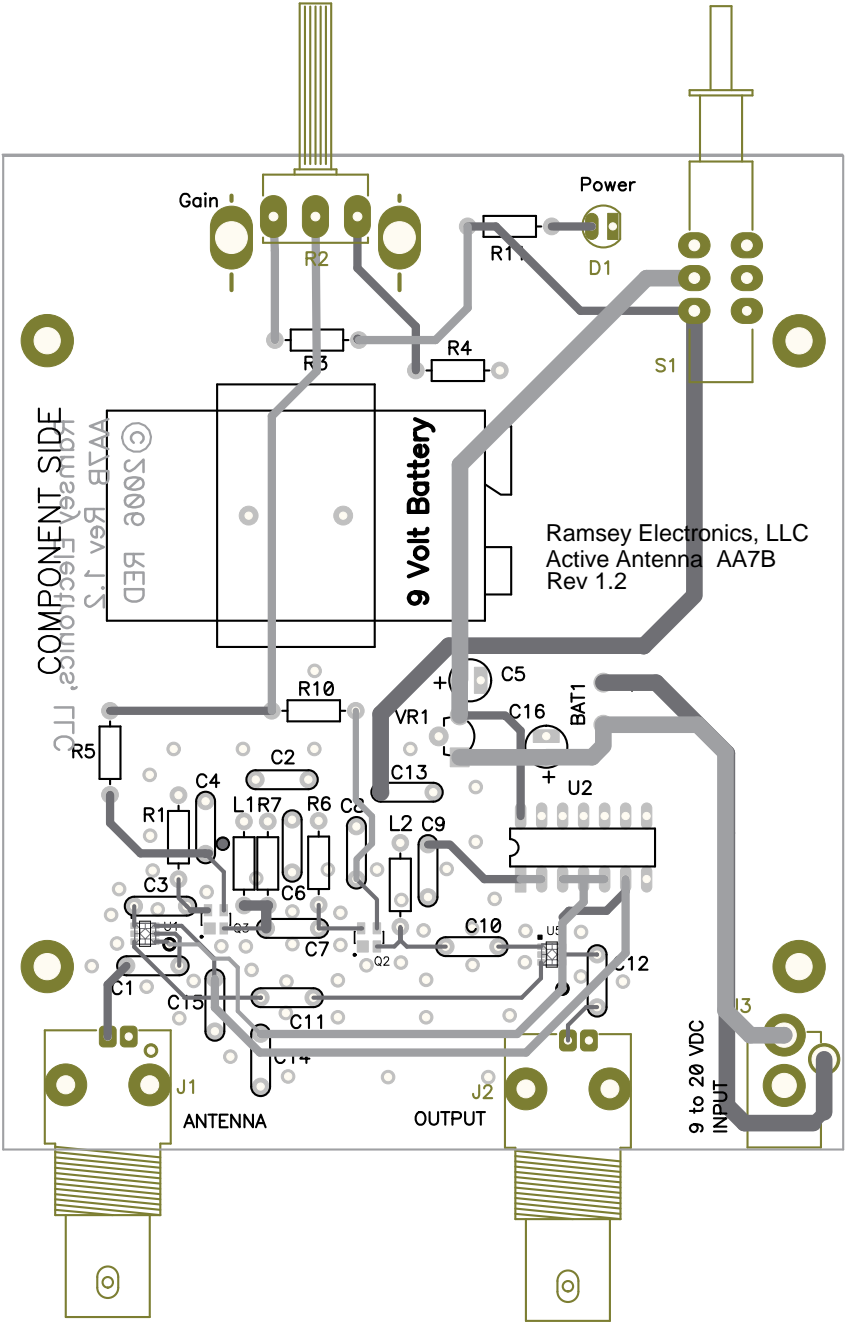
You may be wondering what the other capacitors, like C2, C4, C6, C8, C9, C14 and C15 are for. Remember that a capacitor allows an AC signal to pass through it but blocks DC. These capacitors essentially short the RF signals that may appear on the power supply lines to ground because they have very low resistance to the RF signals. The schematic only indicates the electrical location in the circuit of the capacitors. They may even appear to be all tied to the same place. However... if you look at their physical placement on the circuit board you will notice that they are usually placed very near a component, look at L1 and C6 for example. The physical placement of the capacitor is very important in relation to other factors on the board. At RF frequencies a piece of wire or copper trace on a circuit board can act like an inductor if it is too long. This can have undesirable effects on the circuit operation and will cause it not to work under the right conditions.

The amplifier bypass circuit

If you look below Q3 on the diagram you will see U2:A and U2:B. These are CMOS 74HC00 logic NAND gates. Without going into the NAND gate operation, just know that if a low signal is applied to the input, U2:A pins 1 and 2, the output pin 3 will be high. In other words the output is the opposite of the input. The output of U2:A, pin 3, is connected to the input of U2:B, pins 4 and 5. This means that the output of U2:B, pin 6, will be the same level as the input of U2:A and the connection between U2:A and U2:B will be opposite. There are actually 4 of these gates in U2, but we only need two. The extra two gates have their inputs grounded to keep them from causing noise.

Here's how we control our electronic relays: Pins 4 and 6 of U1 and U5 are connected to U2:A and U2:B's outputs respectively. When power is turned on a high level is applied to U2:A's input. This makes U2:A's output low and U2:B's output high, therefore the relays have pins 5 and 1 connected so the signal is amplified. When power is turned off U2:A's input goes low, the relays switch, and pins 5 and 3 connect. If you follow the signal from J1 through U1 you will see that the signal is connected through C11 to U5 pin 3 and then out U5 pin 5 to J2. This has connected the antenna through the AA7B directly to your receiver!

PARTS LAYOUT DIAGRAM



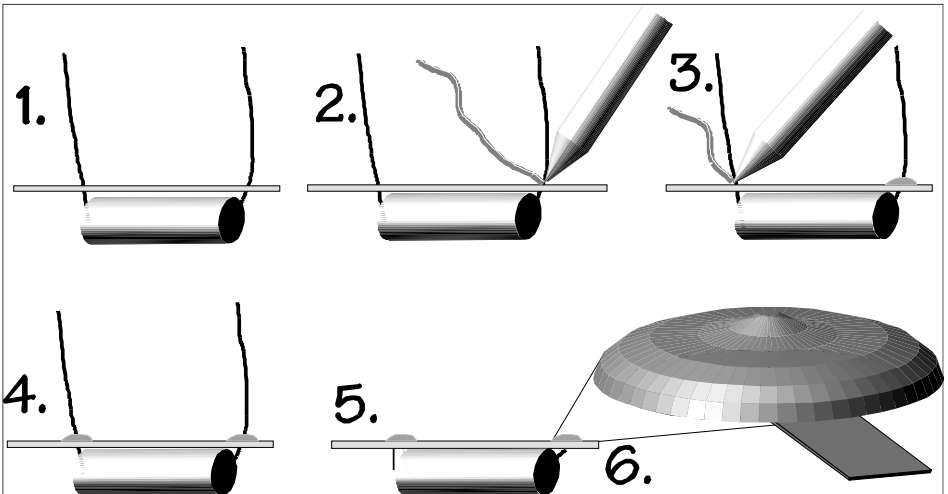
RAMSEY “LEARN-AS-YOU-BUILD” ASSEMBLY STRATEGY

Be sure to read through all of the steps, and check the boxes as you go to be sure you didn't miss any important steps. Although you may be in a hurry to see results, before you switch on the power check all wiring and capacitors for proper orientation. Also check the board for any possible solder shorts, and/or cold solder joints. All of these mistakes could have detrimental effects on your kit - not to mention your ego!

Kit building tips:

Use a good soldering technique - let your soldering iron tip gently heat the traces to which you are soldering, heating both the wires and pads simultaneously. Apply the solder to the pad and wire allowing them to melt the solder not the iron. The finished joint should look like a tepee.

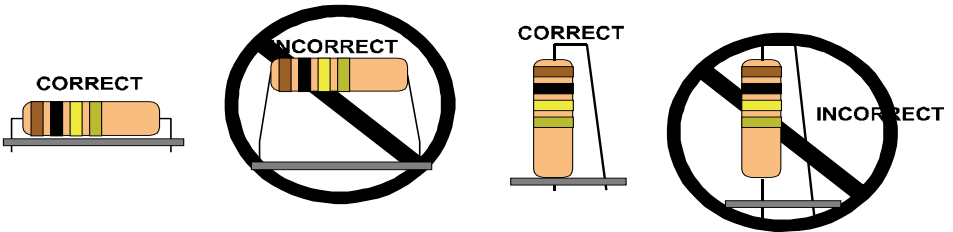
Mount all electrical parts on the top side of the board provided unless otherwise directed. The top side has the silk screen of the parts with their reference designations. When parts are installed, the part is placed flat to the board, and the leads are bent on the backside of the board to prevent the part from falling out before soldering (1). The part is then soldered securely to the board (2-4), and the remaining lead length is then clipped off (5). Notice how the solder joint looks close up, clean and smooth with no holes or sharp points (6).



No matter how clear we may think our manual is, if you have any questions give us a call at the factory or send us an email. We will be happy to help you with any problems you may run into. Contact information is provided on the inside back cover of this manual.

This is a mixed signal project meaning there is digital, audio, and RF circuitry

all in one unit. As with all RF circuitry, we want to mount the parts AS LOW AS POSSIBLE to the board. A 1/4" lead length on a resistor not mounted close to the board can act as an inductor or an antenna causing all sorts of problems in your circuit. Be aware though that there are stand up components in your circuit. They don't need to be squished to the board. Keep the portion of the resistor or capacitor closest to the board mounted right on the board.



For each part, our word "Install" always means these steps:

- 1. Pick the correct part value to start with.
- 2. Insert it into the correct PC board location. Make sure the part is mounted flush to the PC board unless otherwise noted.
- 3. Orient it correctly. Follow the PC board drawing and the written directions for all parts - especially when there's a right way and a wrong way to solder it in. (Diode bands, electrolytic capacitor polarity, transistor shapes, dotted or notched ends of IC's, and so forth.)
- 4. Solder all connections unless directed otherwise. Use enough heat and solder flow for clean, shiny, completed connections.
- 5. Trim or Nip all excess wires extending beyond each solder connection taking care that wire trimmings do not become lodged in PC-board solder connections.

For more information on kit building download a copy of our kit building guide available in the Resource Center of our website at:
www.ramseyelectronics.com.

WARNING: Use only solder approved for electronics work or rosin core solder. Using plumbers solder or acid core solder will destroy your kit and void your warranty.

Let's begin by sorting out our components and cross-checking them against the parts list to make sure we have received everything.

IMPORTANT NOTE! The surface mount parts in your kit have been preinstalled for you. Please do not call the factory for your missing parts; simply look over the board over and you'll find them already soldered into place.

AA7B ACTIVE ANTENNA KIT PARTS LIST

CAPACITORS

- 14 .01 μ F disc capacitor (marked .01, 103 or 10nF) [C1-4, C6-15]
- 2 10 μ F electrolytic capacitor [C5,C16]

INDUCTORS

- 2 22 μ H (red-red-black) [L1,L2]

RESISTORS

- 1 220 ohm (red-red-brown) [R7]
- 1 6.8K ohm (blue-gray-red) [R11]
- 2 10K ohm (brown-black-orange) [R5, R10]
- 2 100K ohm (brown-black-yellow) [R1, R6]
- 1 150K ohm (brown-green-yellow) [R3]
- 1 180K ohm (brown-gray-yellow) [R4]
- 1 100K ohm PC mount potentiometer [R2] (marked 104)

SEMICONDUCTORS

- 2 BF2040 N-Channel MOSFET Tetrode Transistor [Q2,Q3] (pre-mounted)
- 1 LM2936Z-5.0 Voltage Regulator [VR1]
- 1 74HC00N CMOS Quad NAND Gate IC [U2]
- 2 HMC221 Electronic Relay [U1, U5] (pre-mounted)

CONTROLS AND HARDWARE

- 1 DPDT push switch [S1]
- 2 PCB-mounted BNC jacks [J1, J2]
- 1 PCB-mounted Power jack [J3]
- 1 9 volt battery hold-down clamp
- 1 9 volt battery snap connector [BAT1]
- 1 LED power indicator [LED1]

NOT SUPPLIED/OPTIONAL

- 1 9 volt battery (alkaline or heavy-duty)
- 1 External antenna terminated in BNC connector

REQUIRED TOOLS

- Soldering Iron
- Thin Rosin Core Solder
- Needle Nose Pliers
- Small Diagonal Cutters

ASSEMBLY INSTRUCTIONS

The following assembly steps are given in accord with the LEARN-AS-YOU-BUILD philosophy for Ramsey Kits. To the extent that is reasonably possible, parts are installed in the order of signal flow as depicted on the schematic diagram, with some discussion of the components whenever useful.

Because the AA7B is of great interest to people who simply enjoy shortwave listening and VHF monitoring, experienced ham operators should understand that our instructions are addressed to people for whom this may be their very first electronic kit project.

First Assembly Steps

Since you may appreciate some "warm-up" soldering practice as well as a chance to put some "landmarks" on the AA7B PC-board, we first will install some "hardware" components, to make the up-down, left-right orientation of the PC board as clear as possible.

Soldering the AA7B Printed Circuit Board

1. Starting at the bottom-left of the board, install J1 the RF input jack. Solder all 4 points of the jack securely!
2. Install C1, .01 μ F (marked .01, 103 or 10nF) above J1 and below U1.
3. Install C3, .01 μ F (marked .01, 103 or 10nF) on the other side of U1.
4. Install R1, 100k ohm [brown-black-yellow] near C3.
5. Install C4, .01 μ F (marked .01, 103 or 10nF) next to R1.
6. Install R5, 10k ohm [brown-black-orange] above and to the left of R1.
7. Install C2, .01 μ F (marked .01, 103 or 10nF) near C4.
8. Install R2, the RF gain control potentiometer at the top of the board. Make sure it is seated securely and solder the three pins and two mounting tabs.
9. Install R3, 150k ohm [brown-green-yellow] below R2.
10. Install R4, 180k ohm [brown-grey-yellow] to the right of R3.
11. Install R10, 10k ohm [brown-black-orange] above C2.
12. Install L1, 22 μ H [red-red-black] to the right of C4.
13. Install R7, 220 ohm [red-red-brown] to the right of L1. **Note: Inductors L1 & L2 look similar to R7, but are slightly larger in diameter. Make sure you are using the right component!**
14. Install C6, .01 μ F (marked .01, 103 or 10nF) to the right of R7.
15. Install C7, .01 μ F (marked .01, 103 or 10nF) below C6.

- ❑ 16. Install R6, 100k ohm [brown-black-yellow] to the right of C6.
- ❑ 17. Install C8, .01 μ F (marked .01, 103 or 10nF) to the right of R6.
- ❑ 18. Install L2, 22 μ H [red-red-black] to the right of C8.
- ❑ 19. Install C9, .01 μ F (marked .01, 103 or 10nF) to the right of L2.
- ❑ 20. Install C10, .01 μ F (marked .01, 103 or 10nF) below and to the right of C9.
- ❑ 21. Install C11, .01 μ F (marked .01, 103 or 10nF) below C7
- ❑ 22. Install C12, .01 μ F (marked .01, 103 or 10nF) to the right of U5 (note that U5 is pre-mounted on your board)
- ❑ 23. Install J2, the output jack, making sure to solder all 4 points securely.
- ❑ 24. Install J3, the DC power jack, soldering all three points securely.
- ❑ 25. Install U2, the 74HC00N IC, with the notched side facing to the left, making sure to solder all fourteen pins securely.
- ❑ 26. Install the battery snap connector BAT1 — without the battery for now, please! :) Make sure the positive (red) and negative (black) wires are placed in the correct holes. This PC board follows the accepted standard that the red wire denotes the positive hole (+) and the black wire denotes the negative (-) hole.
- ❑ 27. Install C16, 10 μ F above U2. Note that electrolytic capacitors have polarity and must be installed properly. The negative side of the capacitor is marked with a stripe with negative signs. The PC board or the parts layout diagram will show the correctly labeled (+) sign next to the positive hole. Be sure to use the correct polarity.
- ❑ 28. Install C5, 10 μ F to the left and above C16 once again paying attention to the polarity.
- ❑ 29. Install the VR1 voltage regulator with the flat side facing to the left.
- ❑ 30. Install C13, .01 μ F (marked .01, 103 or 10nF) below VR1.
- ❑ 31. Install C14, .01 μ F (marked .01, 103 or 10nF) near J1 at the bottom of the board.
- ❑ 32. Install C15, .01 μ F (marked .01, 103 or 10nF) to the left of C14.
- ❑ 33. At the top of the board to the right of the gain control R2, install R11, 6.8K ohm [blue-gray-red].
- ❑ 34. Install the power indicator LED D1 The LED has a flat side, this indicates the Cathode side of the LED. The Cathode side is also indicated by the shorter of the two leads. Make sure to install the flat side in the same direction as shown on the boards silkscreen or in your Parts Location diagram. Unlike every other component to this point, this LED is not

mounted flush to the board. Install the part so that it is as high above the board as possible. Solder the leads into place. The LED will eventually be lining up with a hole in the front panel and may need to be adjusted.

- ❑ 35. Install the battery hold-down clamp — Be sure not to use too much solder on the clamp as it may keep the battery from sitting flat and securely in the clamp.
- ❑ 36. Install S1, which controls DC power. Solder all six points of the switch.
- ❑ 37. BEFORE connecting battery or conducting any tests, PLEASE recheck each of the preceding steps, looking especially for:
 - quality of solder connections
 - correct orientation of VR1 and U2
 - correct orientation of the electrolytic capacitors C5 and C16
 - correct battery wire polarity
 - correct values for resistors, capacitors, and inductors

INITIAL TESTS

No adjustment or alignment is required. See the following section about preparing a reliable cable for the AA7B and your receiver as well as an optional add-on antenna.

Testing the AA7B consists of turning it on, using it and checking that all of its described features are operational. You will need to become accustomed to the signal strength in the highest range of the gain control. If you experience any problems, consult the Troubleshooting Hints section.

USING YOUR AA7B

For some of our kits, this "USING...." section becomes the longest part of the book, depending on the possible applications of the kit product. What is nice about the AA7B is that using it is simple, enjoyable and immediate.

We have two suggestions that will increase your enjoyment of the AA7B right from the beginning:

- ❑ 1. Prepare a reliable coaxial cable with connectors to run from the antenna input of your receiver or scanner to the RF output of the AA7B (BNC connector). If you do not have them on hand, a visit to your local electronics supply store should easily get you what you need.
- ❑ 2. Make a simple "supplementary portable antenna" of any design which is practical for YOU. Use a small-diameter coaxial cable neatly terminated in a male BNC connector to J1. This antenna can be a dipole,

or random wire with earth ground or counterpoise, a vertical whip of some kind, a Slinky, or even a pair of alligator clips at the end of your coax line, ready to be clipped to any large metal surface that may be handy, from screen doors to bed springs! This accessory for your AA7B will help you explore the truth of "Ramsey's Antenna Rule" in a variety of situations: "If you want more signal, put up more metal!"

A Caution to Ham, Maritime and CB Operators:

If you are using the AA7B to boost reception on a transceiver of any kind, rather than only a receiver or scanner, make sure it is not possible to transmit by accidentally pressing a mike button or CW keyer. Transmitted RF into the AA7B will damage the unit.

TROUBLESHOOTING GUIDE

95% of all kits returned for repair are assembly errors. If you are having problems with you kit please recheck all of your work for: proper component values, component orientation, poor solder joints, solder bridges, etc...

No Power, no gain, LED not lit:

1. Verify the correct output voltage of the external supply or battery being used.
2. Verify the output lead of VR1 is at 5 volts DC. If it is not check the input lead of VR1 for supplied voltage. If input lead is good check installation of VR1.
3. Check U2 pin 2 for 5 Volts with the switch in the on position (pressed). If no 5 volts is present check installation of S1 and U2.

LED Not lit, have gain:

1. Check D1 and R11 for proper installation.

No Gain or signal bypass mode, LED lit:

1. Check voltage at U2 pin 3 for 5 VDC with S1 off. Also check U2 pin 6 for 0 VDC with S1 off. If these voltages are not correct check U2 for proper Installation.
2. Check U1 and U5 pin 4 for 5 VDC with S1 off and pin 6 of those IC's for 0 VDC. If these voltages are not correct then look over U1 and U5 very carefully and see if you notice anything unusual. Since these are pre-installed factory parts and under warranty call Ramsey Electronics for advice on how to proceed. If you attempt to repair these devices and damage them without contacting Ramsey Technical support you may void your warranty.

No Gain, Good bypass mode, LED Lit.

1. Check U1 and U5 pin 4 for 0 VDC with S1 on and pin 6 of those IC's for 5VDC. If these voltages are not correct then look over U1 and U5

very carefully and see if you notice anything unusual. Since these are pre-installed factory parts and under warranty call Ramsey Electronics for advice on how to proceed. If you attempt to repair these devices and damage them without contacting Ramsey Technical support you may void your warranty.

2. Check Q2 and Q3 Drains (D) for 5VDC. If one or both of these are not correct follow the foils back toward the regulator until you find the open.
3. Check Q2 and Q3 Gate number 1's (G1) for approximately 1.3VDC. If one or both of these are not correct follow the foils back toward the regulator until you find the open. Once passing the gate biasing resistors (R1 & R6) the voltage should increase to 5 VDC.
4. Check the 2nd Gates (G2) for a voltage that varies from approximately 2 to 3 VDC. If this voltage is missing follow the foils back to the regulator measuring the voltages as you go. After R3 the voltage should increase to 5 Volts. Also Check R4 for short.

No Gain Control, Gain present, LED lit

1. Check R3 for short
2. Check R4 for open
3. Check R2 for open or short

There are some characteristics associated with preamplifiers and active antennas which do NOT mean that your AA7B is malfunctioning:

Strong AC hum: The antenna is too close to an AC cord or power line, and/or the RF gain is set too high.

Unusual oscillations in receiver: Some portable receivers not enclosed in metal cases may break into oscillation when connected to any RF preamplifier. Try reducing the AA7B gain control and make sure good grounds are on the interconnecting coax cables.

Receiver overloading, heterodynes, images: A preamplifier will intensify any problems with selectivity and image rejection due to poor receiver design.

A FINAL SUGGESTION

A small antenna is most effective whenever it can be outdoors and clear of any surrounding metal building structure. You may wish to use a mix of personal ingenuity and hardware store/junk-box parts to make a simple remote whip that can be quickly mounted on windows, windowsills, balcony rails, or handy points on cars, RVs, etc. We hope you will enjoy your AA7B in a wide variety of listening and monitoring situations.

Kit building is FUN! Ramsey has a wide variety of nifty kits. Ask for our free catalog, where there are plenty more kits ideally suited for you!

AA7B SPECIFICATIONS

Frequency of Operation: 1 MHz to 800 MHz

Bandwidth: >800 MHz

Gain:

1 to 150 MHz: >20 dB*

150 to 400 MHz >12 dB*

400 to 500 MHz >10 dB*

500 to 800 MHz >5 dB*

RF Input

Jack Type: BNC

Max Signal : -20 dBm, 0.01 mW

RF Output

Jack Type: BNC

Max Signal: 0 dBm, 1mW

Power Supply Requirements:

Jack Type: 2.1mm center (+)

External Supply Voltage 9 to 20 VDC

External Supply Current: 40mA max

Internal Battery Voltage 9 Volt Battery

Internal Battery Current 40mA max

Circuit Board Dimensions: 4 in X 4.75 in (101.6mm X 120.4mm)

Case Dimensions: 5 in X 5.25 in X 1.5 in (127mm X
113.4mm X 38.1mm)

Weight completed (with 9V alkaline)

Approx. 10.4oz. (294.8 gr)

* Depends on quality of assembly

THE RAMSEY KIT WARRANTY

1. GENERAL:

Notice that this is not a "fine print" warranty. We want you to understand your rights and ours too! All Ramsey kits will work if assembled properly. The very fact that your kit includes this new manual is your assurance that prior to release of this kit, a varied group of knowledgeable people have assembled this kit from scratch using this manual. During this process, changes and additions are noted by each assembler and integrated into the final version of the manual...which you have! If you need help, please read through your manual carefully, all information required to properly build and test your kit is contained within the pages! However, customer satisfaction is our goal, so in the event that you do have a problem, please note the following:

2. DEFECTIVE PARTS:

It's always easy to blame a part for a problem in your kit. Before you conclude that a part may be bad, thoroughly check your work. Today's semiconductors and passive components have reached incredibly high reliability levels, and it's sad to say that our human construction skills have not! But on rare occasions a sour component can slip through. All of our kit parts carry the Ramsey Electronics Warranty that they are free from defects for a full ninety (90) days from the date of purchase. Defective parts will be replaced promptly at our expense. If you suspect any part to be defective, please mail it to our factory for testing and replacement. Please send only the defective part(s), not the entire kit. The part(s) MUST be returned to us in suitable condition for testing. Please be aware that testing can usually determine if the part was truly defective or damaged by assembly or usage. Don't be afraid of telling us that you "damaged it" or "burned it out", we're all human and in most cases, replacement parts are very reasonably priced. Remember, our goal for over three decades is to have a happy customer, and we're here to work WITH you, not AGAINST you!

3. MISSING PARTS:

Before assuming a part value is missing, check the parts listing carefully to see if it is a critical value such as a specific coil or IC, or whether a RANGE of values is suitable for the component (such as a "100 to 500 uF capacitor"). Often times, common sense will solve a mysterious missing part problem. If you're missing five 10K ohm resistors and received five extra 1K resistors, you can pretty much be assured that the "1K ohm" resistors are actually the "missing" 10 K parts ("Hum-m-m, I guess the orange band really does look red!") Ramsey Electronics project kits are packed with pride in the USA by our own staff personnel. While separate QC checks are made on all product kits, we too are human, and once in a great while there is a chance something can get through those checks! If you believe we packed an incorrect part or omitted a part clearly indicated in your assembly manual for your Ramsey kit, please contact us with information on the part you need. Contact our Repair Department via telephone, email or writing. Please have your invoice number and date of purchase handy.

4. REFUNDS:

All Ramsey products, kit or factory assembled units have an unconditional 10 day (from the date of purchase) return policy to examine our products. If you are not satisfied for any reason, you may return your unassembled kit with all the parts and instructions, or your factory assembled and tested product, together with your proof of purchase to the factory for a full refund less shipping. The return package should be packed securely. Insurance and tracking is highly recommended. A reminder, this applies to unassembled kits. They must be in the same new condition as received, not partially assembled! Assembled kits cannot be returned for credit. No RMA's are required; simply return to Ramsey Electronics LLC, Attn: Product Returns, 590 Fishers Station Drive, Victor, NY, 14564. If you have any questions, please contact us at 585-924-4560.

5. FACTORY REPAIR OF ASSEMBLED KITS:

Most of us at Ramsey are technically oriented and we do realize that things happen! Even following the best practices, with all of the best intentions, there is that chance that your kit doesn't work when you have completed it. Each manual goes into detailed troubleshooting based on the specific kit to help you troubleshoot the problem. We have found that 95% of returned kits involved wrongly installed components (wrong part or backwards polarity). This section of the warranty assumes you have gone through all those steps, and have now reached the point that you need to send it back.

To qualify for factory repair of customer assembled kits, the following conditions apply:

1. Kits must not be assembled with acid solder flux
2. Kit boards or circuits must not be modified in any manner from the version received
3. Kits must be fully assembled, not partially assembled. Our warranty does not include "finishing" your kit!
4. Must include a full description of the problem encountered including the troubleshooting steps you have already done.
5. Must not include non-standard, non-Ramsey accessories, cases, enclosures, knobs, etc. or any batteries.
6. Must include the minimum repair fee of \$25 USD in the form of check, money order or credit card authorization.
7. Ramsey Electronics, LLC reserves the right to refuse any repair due to excessive errors in construction methods.
8. If, due to customer construction methods, the repair is estimated to exceed the minimum flat rate, Ramsey Electronics, LLC will contact the customer to discuss the repairs needed and to receive authorization and payment for repair prior to repair.
9. In the unlikely case that a defective part is found to be the cause of the problem, the repairs will be made at no-charge to the customer, and any payments received for repair will be returned or credited back to the customer.
10. Properly pack your kit, insure the package, and use a carrier that can be tracked. Ramsey Electronics, LLC is not responsible for any loss or damage in shipment. Send the package together with your repair fee to the return address below. No RMA is required.

6. FACTORY REPAIR FEES:

Please understand that our Tech Support Group personnel are not volunteers! They are a dedicated group of highly trained technicians each configured with a very properly equipped test bench. Upon receipt of a repair, the setup, testing, diagnosis, repair, paperwork, and repacking of your kit requires nearly an hour of their time regardless of the size or complexity of the kit! The minimum repair fee represents ½ hour Tech Support time at \$50/hour USD. We try to keep all kit repairs within the realm of the \$25 flat rate whenever possible...and trust us; we exceed that time spent on most kits received more often than not!

7. CONTACT INFORMATION AND RETURN ADDRESS:

Technical Questions

RAMSEY ELECTRONICS, LLC
Attn: Tech Support
590 Fishers Station Drive
Victor, NY 14564
585-924-4560; 585-924-4886 Fax
techsupport@ramseyelectronics.com

Product Repair & Returns

RAMSEY ELECTRONICS, LLC
Attn: Repairs
590 Fishers Station Drive
Victor, NY 14564
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repairs@ramseyelectronics.com

AA7 ACTIVE ANTENNA

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REQUIRED TOOLS

- Soldering Iron
- Thin Rosin Core Solder
- Needle Nose Pliers
- Small Diagonal Cutters

ADDITIONAL SUGGESTED ITEMS

- Helping Hands Holder for PC Board/Parts
- Desoldering Braid

TOTAL SOLDER POINTS

101

ESTIMATED ASSEMBLY TIME

Beginner..... 3 hr
Intermediate..... 2 hr
Advanced..... 45 min.



RAMSEY ELECTRONICS, LLC

590 Fishers Station Drive

Victor, New York 14564

Phone (585) 924-4560

Fax (585) 924-4555

Manual Price Only: \$5.00

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Assembly and Instruction manual for:

RAMSEY MODEL NO. AA7B

ACTIVE ANTENNA KIT