



# Pet Tracking System

Owners Manual



US Version

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## Introduction by Gordon West WB6NOA SIMPLE HAM RADIO LICENSING



It is easy to obtain your Amateur Radio entry level Technician Class license. The licensed amateur radio operator, nicknamed a “ham”, has unrestricted full privileges on all VHF and UHF bands.

The Communications Specialists, Inc. 222 MHz transmitters are designed for licensed ham radio operation on vacant interstitial “channels” throughout the 222 MHz – 225 MHz ham band. The 25 millisecond pulse won’t usually be detected by ham operators using conventional FM (Frequency Modulated) mobile or handheld transceivers. Your sensitive Communications Specialists receiver employs SSB (Single Sideband) filtering so narrow that the receiver won’t pick up voice ham radio transmissions either!

Recent FCC rulemaking has simplified the entry level ham radio test. MORSE CODE HAS BEEN ELIMINATED FOR ALL LEVELS OF HAM RADIO EXAMINATION. The multiple choice exam has been rewritten to a grade school level. All examination questions, plus the correct multiple choice answers, are published in my Technician Class book, word for word! The test is only 35 Q&A’s with 74% pass requirement. Study time with my book is approximately 20 days, and you take the exam from 3 accredited, local volunteer ham examiners. The FCC issues your license about 7 days later.

To order my book and/or my software and CD audio courses, simply call, toll free, 1-800-669-9594. If you want to learn more about ham radio or my ham classes, see [www.gordonwestradioschool.com](http://www.gordonwestradioschool.com), or call me with your questions at 1-714-549-5000. Tell them Gordon West and Communications Specialists, want you on the air as a licensed Technician Class ham radio operator. Complete the course, earn your license, and go LONG RANGE with Communications Specialists products.

## HOW THE SYSTEM WORKS

A miniature transmitter is attached to your pet's collar which emits a pulsed radio frequency signal. This signal is picked up by a directional antenna attached to a very sensitive handheld receiver. As the antenna is pointed towards the transmitter on your pet's collar, the signal becomes louder in the receiver. This allows you to "home-in" or DF (direction find) the transmitted signal and find your pet. This is the same system used by biologists to track wild animals. This system can be used anywhere in the world as it does not rely upon satellite technology (GPS) which requires a direct view to the satellites or any cellular or PCS infrastructure which must be in place and requires monthly fees.

The range is 1-2 blocks in the city and close to 1 mile in open country. It may be used to locate your cat, dog, horse, or any other pet. It can also be used to locate a lost child in the park, at the beach, shopping mall, or amusement park as well as a wandering Alzheimer's patient.

The uses are only limited by your imagination. The PR-100 receiver allows reception of 50 miniature transmitters all operating simultaneously in a single household or neighborhood without interference to each other. Each transmitter is programmed by the factory to one of the 50 channels.



## MINIATURE TRANSMITTERS

The transmitters are sold in several configurations to allow simple mounting. Regardless of mounting type, all are the same. Each weighs approximately 1/2 ounce including the battery, which allows it to be used on the smallest of pets. A channel number is marked on the side of each unit and also on the transmitter under the battery.



Channel number



Antenna stitched  
into collar

### BREAKAWAY CAT SAFETY COLLAR TRANSMITTERS



Antenna stitched  
into collar

### SMALL DOG COLLAR TRANSMITTERS



4" Antenna Wire



### PT-1 UNIVERSAL HANGING TRANSMITTER

(With Attachments Shown)  
For use with Larger Pets,  
Children or Adults!

## SECURING THE TRANSMITTER ON YOUR CAT

The standard cat transmitter is mounted on a break-away collar which is available in 7 different colors. One size fits most cats and extension links are available upon request. Just snap in the appropriate link, or no link, and adjust the collar for proper fit. The collar should be snug but not too tight. The collar can be used on the smallest kitten, but be aware that the break-away collar may not work if the cat is not heavy enough to snap it apart if the collar gets caught on something. If your cat has never worn a collar before, it will probably be removed a few times at first. Just find the collar with the receiver and put it back on your cat. After a day or two, most cats adjust to the collar and it should stay on.

## SECURING THE TRANSMITTER ON YOUR SMALL DOG

The small dog collar is also available in 7 different colors. It is the same size as our cat collar but has a standard buckle and a ring to hang a dog license or name tag from. An extension piece can be requested for use with a larger dog. It can be used as a secondary collar for a large dog but do not use the small collar to walk your large dog on a leash.

## SECURING THE TRANSMITTER ON YOUR LARGER DOG, PET OR CHILD.

The miniature transmitter is also supplied by itself with a loop and several attachment pieces. Use the split ring to install the transmitter with your dog's license and ID tags. For other pets, attach it wherever appropriate, using care not to cut or damage the antenna. The higher the better as range will be increased the further it is off the ground. The transmitter can also be attached to a child's belt loop or back pack. The possibilities are endless, use it to keep track of loved ones, recreational equipment and just about anything!

## BATTERY

The battery must be installed in the transmitter before use. It is a CR2032 Lithium coin cell available from us in a 12 pack. It may also be found at retail stores that sell photo or hearing aid batteries.

### TO REMOVE THE OLD BATTERY:

1. Remove the collar from your pet.
2. Twist the lid off of the transmitter base.
3. Tip the transmitter upside down and the battery will fall out.
4. Dispose of the battery properly.

### TO INSTALL A NEW BATTERY:

1. Insert a fresh battery. Positive (+) side of the battery is facing up.
2. Replace the lid on the transmitter. **Check for proper operation with your receiver.**
3. Reinstall the collar on your pet and you are done for another 4 weeks.



**BATTERY INSTALLED WITH  
+ POSITIVE SIDE FACING UP**

The first time the lid is twisted onto a new collar, slightly re-tighten it after a few days of use. This will force solid contact with the lid contact springs.

If you reverse the battery, it will be shorted out when the cap is installed and may not power the transmitter properly until it has had an hour or so to recover from being shorted.

We suggest replacing the battery as soon as you detect a change in the sound of the transmitter. Rather than a "beep" that does not change tone, a weak battery will sound more like a "sweeping" tone. This will happen after approximately 4 weeks of use, or less if the transmitter is subjected to cold weather outside. At this point, you should still have a week or so of battery life left.

**If you are using our old batteries with pull tabs,  
make sure you peel the tab completely off the battery  
before installation or the transmitter will not function.**



# PR-100 RECEIVER CONTROLS



1. ANTENNA JACK

2. LIGHTED METER

3. RANGE SWITCH

4. SPEAKER

5. ON-OFF-BATTERY TEST SWITCH

6. VOLUME CONTROL

7. BATTERY COMPARTMENT

8. TUNE CONTROL

9. CHANNEL SWITCHES

7. BATTERY COMPARTMENT

10. HEADPHONE JACK

11. DC POWER JACK

## 1. ANTENNA JACK

The antenna jack accommodates the attached FA-3 folding directional antenna coax with BNC plug. To re-install the antenna cable, grasp its plug in one hand and the receiver in the other, push the antenna plug into the receiver antenna jack while turning the knurled nut clockwise until it locks into place. Twist the knurled nut counterclockwise until it stops and gently pull the antenna straight out to remove it.

## 2. METER

The lighted meter on the receiver has two uses. The first is to measure the relative strength of the incoming signal from your transmitter. Use the VOLUME CONTROL to set the meter around mid scale. Use the changes in upward meter movement in addition to listening to the transmitter's pulsed signal to determine when the signal is the strongest. The meter is also used to measure battery condition when the ON-OFF-BATTERY TEST SWITCH is in the BATTERY TEST position. The battery indication box on the bottom part of the meter scale will indicate the battery voltage remaining. A seven (7) on the meter is seven (7) volts remaining (almost totally discharged battery), a nine (9) on the meter indicates nine (9) volts remaining (a good battery). Replace the battery when the needle falls below 7.

## 3. RANGE SWITCH

The RANGE SWITCH is a three (3) position switch used to attenuate (lower) the signal going from the antenna to the receiver so it is not overloaded by a strong signal. In LONG, there is no attenuation, so the receiver is listening with full sensitivity. In the MED (or medium) position, approximately 20dB of attenuation is inserted between the antenna and receiver. In CLOSE another 20dB of attenuation is inserted for a total of 40dB. To DF your pet, always start in the LONG position to make sure it can be heard. If you are able to hear its transmitter, change switch positions to MED and see if it can still be heard. If it can not, go back to LONG, adjust the VOLUME CONTROL so the meter indicates around mid scale and turn around in a full circle pointing the antenna away from you in

order to find the strongest pulsed signal strength. The strongest signal strength will be in the direction your pet is located. Walk in that direction until you can move to the MED position and still hear the signal. Continue to walk in the direction of the strongest signal until you can move to the CLOSE position. When you can hear your pet's transmitter in the CLOSE position with the antenna pointing towards the strongest signal, your pet is very close to you.

#### 4. SPEAKER

A large, full audio range speaker is used to provide very good sound quality. Keep liquids, dirt, sand, and other foreign material from falling into the small holes in the speaker grill.

#### 5. ON-OFF-BATTERY TEST SWITCH

In the OFF position, no battery current is drawn. This is how the switch should be left when the receiver is not in use. When switched to the ON position, the receiver is active and drawing current from the battery. In the BATTERY TEST position, the condition of the battery under load is tested and the results are available on the METER.

#### 6. VOLUME CONTROL

The VOLUME CONTROL is used to raise or lower the audio level to the speaker and meter circuit. Adjust it to suit your own preference. Note that it is easier to DF a signal that falls around mid scale on the METER than one banging against the upper meter stop.

#### 7. BATTERY COMPARTMENT

The BATTERY COMPARTMENT on the bottom of the receiver houses the 9 volt alkaline battery in a pull-out drawer. To open the drawer, place one of your fingernails in the slot on the bottom edge of the drawer and lift up with your finger until the drawer snaps upward. Then pull the drawer out. **DO NOT REMOVE THE TWO SCREWS HOLDING IN THE BATTERY COMPARTMENT!** With the drawer in your hand, pop up the battery and replace it, if

discharged, with a new alkaline battery. Be sure to note the proper battery polarity when placing the battery back in the drawer. If you force the battery in with reversed polarity, the receiver will not work but will not be damaged. Simply remove the battery drawer and flip the battery over.

Battery life at moderate volume levels is approximately four (4) hours. To conserve battery life, turn the receiver off when not in use. Keeping a spare battery in your pocket, carrying case pocket or vehicle is a good idea.

## 8. TUNE CONTROL

The TUNE CONTROL allows the PR-100 to be "fine tuned" over a narrow frequency range aiding in the intelligibility of extremely weak signals. It only slightly changes the "tone" of the received beeps and optimizes the receiver to your best hearing range.

## 9. CHANNEL SELECTOR

The CHANNEL SELECTOR is a two (2) position push wheel switch. To advance to a higher channel, simply push the + button located under the switch window. To go to a lower channel, push the - button located over the switch window.

## 10. HEADPHONE JACK

A 3.5mm (1/8") headphone jack is on the bottom panel next to the battery compartment. When an earphone or headphone is plugged in, the speaker in the receiver is disabled. If stereo headphones are used, only one side will be active.

## 11. DC POWER JACK

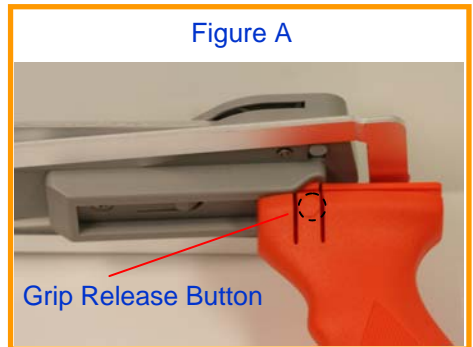
The DC power jack is used to power the PR-100 with or without a battery in the BATTERY COMPARTMENT. Use the CM-1, 12vdc power cable, to connect to the cigarette lighter socket in the vehicle. If either an alkaline, NiMH, or Li-Polymer battery is installed, the battery is automatically bypassed and no current is drawn from it when this jack is used.

## ANTENNA

The PR-100 is supplied with a high gain, directional antenna that attaches directly to the receiver. In order to find your pet's direction, the antenna elements must be fully extended as shown below. You may change the polarity by rotating the receiver with your hand. The below photos show both vertical and horizontal polarization. Hold the PR-100 as shown in the photos and try both vertical and horizontal polarization while turning your body around in a circle. See which polarity either gives the loudest signal or the most accurate bearing information.

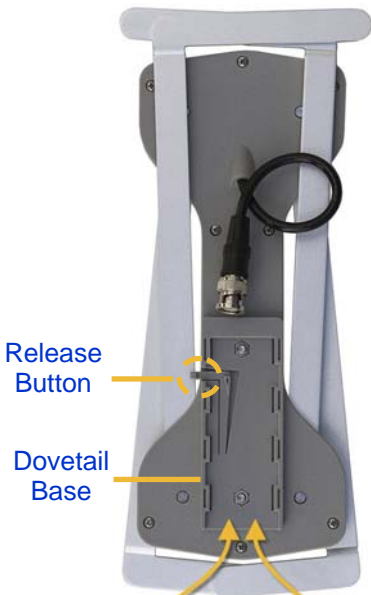
The directional antenna comes with a removable pistol grip handle. You can use the receiver with or without the grip. The grip slides into the bracket beneath the antenna and will lock into place with a small click. To remove the grip, depress the grip release button slightly and slide grip free as shown in Figure A.

A holster style carrying case is supplied with the receiver. It can be attached to a belt and worn while searching for your pet, or used to protect the receiver and antenna during storage. There is a small pocket on the case for storing spare 9 volt batteries.



To collapse the antenna elements, slide the numbered buttons shown in Figure B. Start with position 1 as you gently fold in the elements. Repeat for positions 2 through 4. When opening the antenna it does not matter which order the elements are unfolded.

Figure B



Optional CA-4 Coax Assembly

The directional antenna can be used in two ways. The PR-100 receiver can be mounted on the FA-3 antenna for one handed operation or the CA-4 coax assembly can be attached so that the antenna and receiver can be separated.

To attach antenna, align the dovetail antenna slide from the receiver or cable assembly with the dovetail base on the antenna. Slide and push forward until a slight click is heard or felt. Pull back to make sure the latch is fully engaged. Install the BNC plug attached to the antenna coax.

To remove, depress the release button as shown and slide either backwards off the antenna slide.

## USING THE LOCATOR SYSTEM TO FIND YOUR PET

- 1. As soon as you put a transmitter on you pet, make sure it is operating properly by listening to it with your receiver set to the proper channel.** This will insure that the battery was properly installed and that the transmitter is functioning.
2. Momentarily put the ON-OFF-BATTERY TEST SWITCH on the receiver in the BATTERY TEST position and see if the battery tests O.K. on the meter. If questionable, be sure to carry a spare with you.
3. Unfold the FA-3 directional antenna. Turn the ON-OFF-BATTERY TEST SWITCH to ON and set the VOLUME CONTROL to a comfortable listening level.
4. Set the CHANNEL SELECTOR to the channel of your pet's transmitter. Use the TUNE CONTROL to fine tune the pitch of the received audio tone. You should be able to hear the pulses from the transmitter with the RANGE SWITCH in the LONG position. If you can not, hold the receiver level in your hand, use vertical antenna polarity to start with and turn around in a full circle and see if you hear the transmitter. If you do not, try horizontal antenna polarity and try again. Make sure your cell phone and cordless phone are not on if you are carrying them.
5. If you still do not hear the transmitter, you will have to change location to get closer to your pet. Try walking outside, then up and down the block pointing the antenna in different directions as you go. If your pet is more than a block or two away, use your vehicle to get closer. Have the passenger, not the driver, hold the receiver while pointing the antenna out the window until your pet's pulsing transmitter is heard. Range will be shorter with the antenna inside the vehicle, so stop now and then, get outside, and turn around in a full circle to increase it. If you are in hilly terrain, get as high as possible, get outside the vehicle, and turn around in a full circle until the transmitter is heard. Some vehicles generate considerable interference even with the key off. Get outside the vehicle if this is a problem.

6. When you hear the transmitter, note its direction, and head towards it. As the signal gets stronger, change the RANGE SWITCH to the MED position. Raise or lower the VOLUME CONTROL to keep the meter indication around mid scale.

7. Recheck for proper direction and continue. When you get close to the transmitter, you can change the RANGE SWITCH to the CLOSE position and generally walk towards the strongest signal until you find it.

8. It is a VERY good idea to try a few dry runs having someone else hide the transmitter with you finding it using the above method.

## CLOSE-IN DIRECTION FINDING

If following the previous section does not allow you to find a lost collar, especially one that is detached and out of sight under leaf litter, use the following procedure.

Get as close as possible with the antenna unfolded as usual. You should be able to get close enough that the transmitter can be heard in the CLOSE position, hopefully within a foot or two. Keep the VOLUME CONTROL as low as possible so you can hear very small changes in received signal strength as you point the antenna at the ground in various possible transmitter hiding places.

At distances less than a foot or two with the antenna attached, the receiver becomes overloaded even when the RANGE SWITCH is in the CLOSE position. When this happens, the folding antenna ceases to provide accurate position information to the receiver. Just disconnect the BNC plug from the ANTENNA JACK on the receiver so it is operating without an antenna. Hold the receiver in one hand and probe around over where the transmitter may be hiding. Start with the RANGE SWITCH in LONG, then switch to MED as you probe closer, and finally to CLOSE when you are within an inch or two. In the CLOSE position and no antenna, you should be able to detect changes in received signal strength with the receiver almost touching the transmitter.

## ORDERING

1. Order a PR-100 receiver.
2. Order one transmitter for each pet.
3. Order a battery 12 pack for each transmitter for over one year of uninterrupted operation (10 year shelf life). See page 17.
4. Order using VISA, MasterCard, Discover, check, or money order by toll-free phone, FAX, mail, web (PayPal or credit card) or E-mail.

## FAST SAME DAY SHIPPING

PR-100 RECEIVER     \$249.95

Model **PR-100** includes the FA-3 antenna, FA-3-C carrying case and a 9 volt alkaline battery.

It covers all legacy pet channels (CH 10 to CH 59) and the new Amateur Radio pet channels (CH 60 to CH 09).



**CAT TRANSMITTERS**      \$49.95 each  
Supplied with 2 Batteries

**CT-Y** bright yellow cat collar with transmitter

**CT-M** multi-colored cat collar with transmitter

**CT-BLK** black cat collar with transmitter

**CT-P** bright pink cat collar with transmitter

**CT-B** blue cat collar with transmitter

**CT-O** bright orange cat collar with transmitter

**CT-G** green cat collar with transmitter



**DOG TRANSMITTERS**      \$49.95 each  
Supplied with 2 Batteries

**DT-Y** yellow dog collar with transmitter

**DT-V** violet dog collar with transmitter

**DT-BLK** black dog collar with transmitter

**DT-P** pink dog collar with transmitter

**DT-B** blue dog collar with transmitter

**DT-R** red dog collar with transmitter

**DT-G** green dog collar with transmitter



**PT-1 UNIVERSAL TRANSMITTER**  
**FOR DOG, PET, CHILD**      \$49.95 each  
Supplied with 2 Batteries

PT-1 ATTACHMENTS INCLUDED



## RECEIVER ACCESSORIES:

**FA-3** spare directional antenna **\$59.95**



**FA-3-C** Spare receiver/antenna case **\$10.00**



**CM-1** 12vdc Cigarette lighter power cable **\$12.95**

**CA-4** Coax Assembly 5' long with molded BNC connectors barrel connector, and clamps assembled on antenna slide so antenna can be used when detached from PR-100 (see page 12) **\$11.95**

## TRANSMITTER ACCESSORIES:

### **BP-12B**

Battery pack, includes 12 each of CR2032 batteries with 10 year shelf life. **\$5.95**



### **CR-K Collar Replacement Kit**

Collar Kits are available in all standard colors for either dogs or cats. We supply the required tool, parts and instructions to remove the transmitter from a worn or damaged collar and insert it into a new replacement collar kit. **\$10.00**



## TROUBLE SHOOTING:

### **The collar is too big for my kitten or puppy:**

You can temporarily shorten the collar for a small kitten or puppy with a cable tie or a piece of electrical tape by gathering the excess length, folding it over and securing it with the wire tie or tape.



### **I can't hear my pet's transmitter:**

- Make sure a fresh battery is installed in both the receiver and the transmitter. The transmitter battery must be + side facing up.
- Set the receiver to the proper channel.
- Set the range switch to the long position.
- Make sure the antenna elements are unfolded and the connector is securely tightened.

## **Amateur Radio Licensing**

Our low powered pet transmitters shipped to addresses within the USA, now operate only on Amateur Radio frequencies. According to FCC regulations, they require licensing for legal operation. There are no restrictions on their sale or possession, however Communications Specialists urges users to become familiar with and observe all laws and regulations governing Amateur Radio licensing and operation of these transmitters. Please note that Amateur Radio is not for commercial use. See page 2 of this manual for more information on Amateur Radio Licensing.

## FCC COMPLIANCE INFORMATION

The PR-100 complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation. Any changes or modifications to this device will void the user's authority to operate the equipment.

## ABOUT US

Communications Specialists, Inc. has been building quality electronic products that the land mobile, wildlife telemetry, and pet industries have come to rely on for over 40 years. At our Orange California factory, we utilize the latest in surface mount assembly technology to assure consistent quality throughout our entire product line. All our products are made in the USA.

## WARRANTY

The PR-100 and transmitter are both warranted to be free of defects in materials and workmanship for a period of one (1) year from the date of purchase. If you need to take advantage of our warranty, please follow these steps:

1. Securely repackage the receiver or transmitter. If possible use the original shipping box.
2. Include a note as to the nature of the problem.
3. Include your shipping address and a daytime phone number or E-Mail address.
4. Ship to the address below.



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