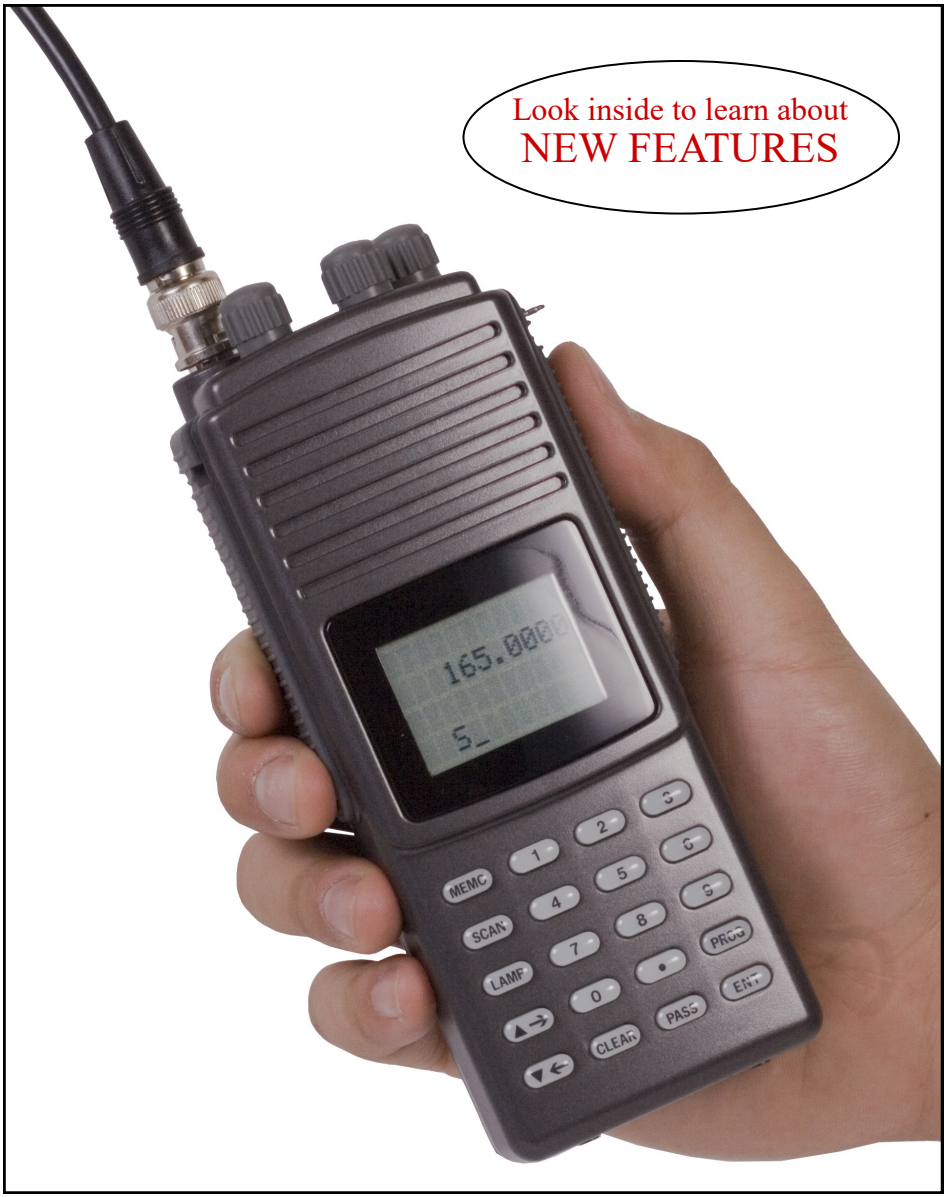
R-1000 TELEMETRY RECEIVER

OPERATING MANUAL



COMMUNICATIONS SPECIALISTS, INC.
426 WEST TAFT AVENUE • ORANGE, CA 92865-4296
(714) 998-3021 • FAX (714) 974-3420
Entire U.S.A. (800) 854-0547 • FAX (800) 850-0547
http://www.com-spec.com

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FCC Compliance Statement

This device 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.

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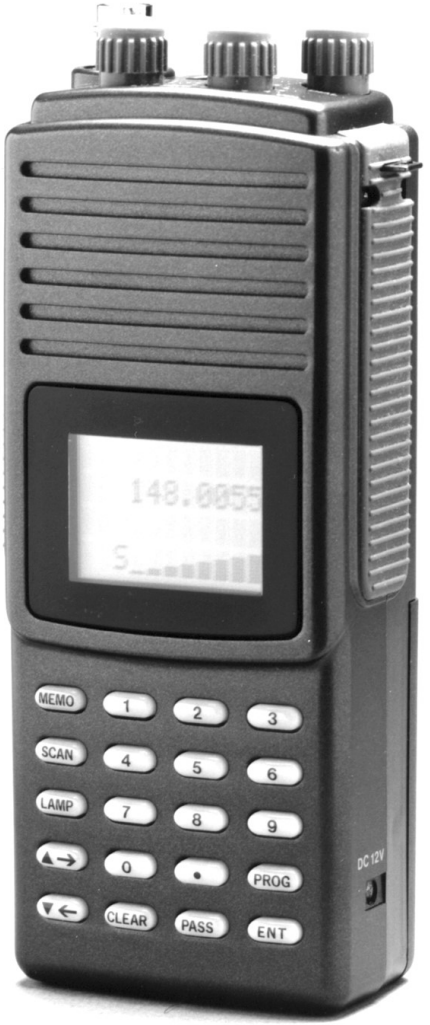
FEATURES

- **Factory tuned to one of the following 12 MHz wide segments in the 148 - 174 MHz Band. Custom tuning is available upon request.**
  148-160 MHz
  158-170 MHz
  162-174 MHz
- **Dual front end also covers 216 – 222 MHz.**
- Very high sensitivity of -148 to -150 dBm.
- Variable RF Gain control with 140dB range.
- Step increments programmable in .1 kHz, .2kHz, .5kHz, or 1.0kHz steps.
- Digital signal strength meter that responds to narrow telemetry pulses.
- Loud 120mw audio output.
- 999 non-volatile memory channels. Each one with alphanumeric comment field and .1kHz (100Hz) resolution frequency storage.
- Scans through all memory channels. Dwell time on each channel is programmable from 1 to 30 seconds in 1 second steps. Any memory channel can easily be programmed out of the scan sequence.
- Audible beep feedback when any key is pushed confirms entry and can be programmed on or off.
- For illumination in darkness, the display and keyboard are backlit with LEDs.
- Supplied with 4 high capacity NiMH rechargeable batteries for 12-hour operation.
- Also supplied with both 110/220vac wall charger and 12vdc cigarette lighter charger. Both chargers will charge and operate receiver with good, dead, or no batteries.
- Easy slide off battery compartment door to allow operation off regular "AA" alkaline batteries.
- Also supplied with tough nylon case with belt loop, rubber duck antenna for non-directional use, belt clip, wrist strap, mono headset adapter and coax cable.
- 1 year warranty.

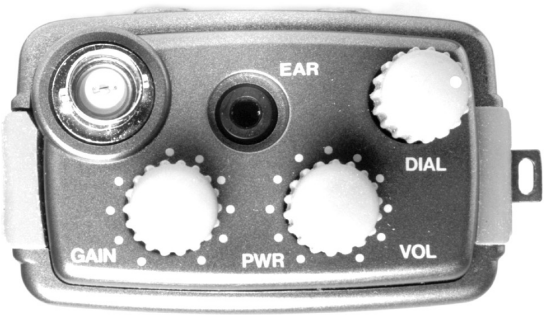
SPECIFICATIONS

Selectivity:	6dB down @ ± 1.2 kHz, 60dB down @ ± 2.2 kHz
Receive Mode:	CW
Antenna Impedance:	50 ohms
Antenna Jack:	Standard BNC (BNC female)
Power Requirements:	4.8vdc (4 ea. "AA" Ni-cad or NiMH rechargeable batteries), or 6.0vdc (4 ea. "AA" Alkaline batteries), or 9-16vdc from supplied 110/220vac wall or cigarette lighter charger
Current Drain:	160ma at maximum audio output
Dimensions:	6.1" (15.5cm) high, 2.6" (6.6cm) wide, 1.5" (3.8cm) deep, less knobs
Weight:	12.4oz. (352 g) with supplied NiMH rechargeable batteries
Headphone Jack:	Top Mounted 3.5mm (1/8") mono headphone jack

FRONT VIEW



TOP VIEW



OPERATING INSTRUCTIONS

[BOLD] = Front panel keyboard keys, **(BOLD)** = Top panel knobs

BASIC START-UP

1. Turn **(PWR/VOL)** knob to the right.
2. Press **[CLEAR]**.
3. Enter frequency (i.e.: 164.4375MHz) press **[1] [6] [4] [.] [4] [3] [7] [5]** on the keypad and press **[ENT]**. 164.4375 will appear in the display window. Rotate **(DIAL)** to fine tune if needed. If you make a mistake press **[CLEAR]** to start over.
4. The RF**(GAIN)** knob will serve as your attenuator. Turn it to the right (CW) for long range reception and to the left (CCW) for close tracking.

STORING DATA IN THE MEMORY BANK

Store as many as 999 frequencies in the memory bank. Each memory channel holds one frequency with an alphanumeric comment for convenient identification. The stored data can be recalled quickly and easily.

1. Turn the receiver on and press **[PROG]**. PROG-MEMORY will appear at the top of the display window.
2. The cursor will be on the top line. Press **[▽←]** to bring the cursor to (CH) channel selection. Enter the number 001 - 999 where the frequency will be stored and press **[ENT]** or scroll with **(DIAL)** to desired channel.
3. Press **[△→]** to move the cursor to the top line and use the keyboard to enter the frequency to be stored in that channel, then press **[ENT]**. The receiver will now be active on that frequency. Once the frequency is entered rotate **(DIAL)** to fine tune if needed. Push **[ENT]** again if no TXT line or no change is required to TXT line after entering frequency, to exit programming mode.
4. Press **[▽←]** to move cursor to TXT line. Rotate **(DIAL)** until the chosen letter or symbol is displayed. A maximum word length of seven characters may be used. Press **[△→]** to advance to next character. Press **[ENT]** when finished to exit programming mode.
5. If you make a mistake, press **[PROG]** to start over.

ACCESSING THE MEMORY BANK

1. To access memory bank, press **[MEMO]**, channel number and **[ENT]** or scroll through the channels by using **[△→]** or **[▽←]** or **(DIAL)**.
2. To exit memory press **[CLEAR]**.

SCANNING THE MEMORY BANK

The receiver will pause on each channel for 1 to 30 seconds. The default setting is 5 seconds. See Menu Programming to change the default setting.

1. Press **[SCAN]**.
2. To exit Scan, press **[MEMO]** or **[CLEAR]**.

CHANGING DATA IN THE MEMORY BANK

The data stored in the memory bank can be changed or deleted at any time.

1. Press **[PROG]**. If channel shown is not the one you want to change, press **[▽←]** to bring cursor to the channel number. Enter the channel number you want to change and **[ENT]** or scroll using **(DIAL)**.
2. Press **[△→]** to bring cursor to the frequency, key in new frequency and **[ENT]** or rotate **(DIAL)** to desired frequency.
3. If you are *only* changing the frequency, press **[ENT]**.
4. Press **[▽←]** to bring the cursor to TXT to change the comment, press **[ENT]** when finished.
5. To delete a channel press **[PROG]** then **[▽←]**. The cursor is now on the channel line, enter the channel number and **[ENT]** or scroll using **(DIAL)**. Press **[CLEAR]** and **[ENT]**.

PASS

The pass feature allows you to *skip* or *pass* over selected frequency channels from your memory bank while in the scan mode.

1. You can select the channel to be passed over from the scan or memory mode by pressing **[PASS]** while the selected frequency is shown on the display. The frequency is now omitted from the scan list.
2. To add the channel back to your scan list press **[MEMO]**, the channel number and **[ENT]** or use **[△→]** or **[▽←]** or **(DIAL)** to scroll through the memory channels. Passed frequencies will display a small "p" in front of the frequency. Press **[PASS]** to cancel the pass feature and the frequency will be returned to your scan list.

MODIFY NUMBER OF CHANNELS

You may notice, while scrolling through the memory bank, a slight delay after the last channel before it returns to the first channel. This is due to the receiver scanning all 999 channels before returning to channel 001. If you only use the receiver to monitor a few frequencies, you may choose to modify the number of channels

1. To limit number of channels to 99 press and hold **[1]** while turning on power, to limit channels to 199 press and hold **[2]** while turning on power, to limit channels to 299 press and hold **[3]** etc.
2. To return to 999 channels press and hold **[0]** while turning on power.

KEYGUARD LOCK

The keyguard lock feature allows you to lock the keypad. While in the keyguard mode the only keys on the keypad that can be used are the **[△→]** **[▽←]** keys. **(DIAL) RF(GAIN)** and **(PWR/VOL)** knobs operate normally.

1. To activate keyguard mode, press and hold **[MEMO]** for 5 seconds.
2. To cancel keyguard press and hold **[MEMO]** for 5 seconds.

PROGRAMMING MENU

You can customize your receiver by changing the default settings in the programming menu.

1. To access menu, press and hold **[ENT]** for 5 seconds.
2. Move the cursor with **[△→]** or **[▽←]** to select menu option.
3. Rotate **(DIAL)** to:
   - Change scan dwell time from 1 to 30 seconds in 1 second steps.
   - Change steps to .1kHz, .2kHz, .5kHz, 1.0kHz.
   - Select beep tone on or off.
4. Press **[ENT]** when finished.

CPU RESET

Should the microprocessor "hang up" and need to be reset, this can be done easily and without losing memory.

1. Press and hold **[CLEAR]** while turning receiver on.
2. Menu Programming will return to default settings of 5 second scan, 1.0 kHz steps, and beep on.

LAMP

The **[LAMP]** key will illuminate the display and keypad for use in darkness.

1. Press **[LAMP]** to illuminate the display and keypad for 5 seconds.
2. Press and hold **[LAMP]** for 2 seconds to illuminate continuously until **[LAMP]** is pressed again.

EARPHONE JACK

A 3.5mm (1/8") earphone jack is mounted on the top panel. When an earphone or headphone is plugged in, the internal speaker in the receiver is disconnected. If stereo headphones are used, only one side will be active.

RECHARGING THE BATTERIES

The receiver is supplied with both wall and cigarette lighter chargers that plug into the side to recharge the batteries. A fully charged radio will provide approximately 12 hours of operation at moderate volume. The batteries should be charged overnight. Do not keep receiver on charger any longer than two or three days.

USING ALKALINE BATTERIES

If "AA" alkaline batteries are installed in receiver, **DO NOT** plug either wall or cigarette lighter charger into receiver. Remove at least one alkaline battery if you choose to operate receiver directly off wall or cigarette lighter charger without consuming battery power. If supplied rechargeable batteries are installed, they may be left in while using wall or cigarette lighter charger.

LOW BATTERY WARNING

If the NiMH batteries are low, the LOW BATTERY WARNING indication will not go off when plugging in the charger. The radio must be turned off first to extinguish the warning. This will alleviate the radio from being accidentally left on and draining the batteries.

CLEAR MEMORY

Warning. This will delete ALL of your stored frequencies and comments. Once the memory has been cleared, you will have to reprogram your data per the instructions on page 4.

To clear your stored data, press and hold **[MEMO]** as you power on the receiver for two seconds.

CLOSE-IN DIRECTION FINDING

Because the RF**(GAIN)** control on the R-1000 has a very large attenuation range of -140dB, it has the ability to obtain directional information to within inches of a telemetry transmitter.

First verify that the yagi antenna you are using is correct for the frequency range you are using (usually on a label attached to it) and that the coax is in good condition. Start your search 50 meters or so away to make sure the antenna actually has good directivity with the RF**(GAIN)** control turned up (clockwise) as much as necessary to hear the signal. Adjust the **(VOL)** control to a comfortable level.

While walking in the direction of the strongest signal, turn down the RF **(GAIN)** control (CCW), while advancing the **(VOL)** control so you can hear small changes in the signal strength. Sweep the yagi antenna back and forth to make sure you are still heading in the direction of the strongest signal. When you are within a meter of the transmitter, the RF**(GAIN)** control will be almost fully down (CCW) and the **(VOL)** will be fully up. If the transmitter is not visible (under litter or buried), remove the coax connector from the antenna end of the coax and use it to sniff out the strongest signal. You can also sniff out the transmitter using the R-1000 in your hand with the coax removed.

When done with close-in direction finding, make sure the RF**(GAIN)**control is returned to full (CW) and the **(VOL)** control is returned to a comfortable level otherwise you will not be able to hear a new weak or distant transmitter.

HIGHER BACKGROUND NOISE IN LATE MODEL RECEIVERS

In late 2012 we increased the gain in the R-1000 receiver. This gives increased range and higher audio level. It also increases how many signal strength bars are displayed even with no antenna connected. Each receiver is slightly different and is also affected by which 12MHz frequency segment is requested. Since the signal strength bars are relative only and not absolute, just turn down the RF**(GAIN)** control if you want to display fewer bars. The **(VOL)** control has no effect on them and is only used to adjust the audio to a comfortable level. DFing is always done with the RF**(GAIN)** control.

If you would like the gain reduced in your current receiver, we will reduce it at no cost so it acts like your past receivers. Just tell us how many bars you would like to have showing with no antenna connected and the RF **(GAIN)** fully clockwise.

SUPPLIED ACCESSORIES

RA-1 AA NiMH Rechargeable Battery (4 ea)

RA-2 Nylon Case with Belt Loop

RA-3 Rubber Duck Antenna

RA-4 Belt Clip

RA-5 Wrist Strap

RA-6 AC Wall Charger 110/220vac

RA-7 DC Cigarette Lighter Charger

RA-8 Mono Headset Adapter (1/4" female to 3.5mm male)

RA-60 5' Coax Cable with BNC at each end

R-1000 (complete with above accessories)
Please specify one of the following 12 MHz wide segments when ordering. Custom tuning is available upon request.
148-160 MHz
158-170 MHz
162-174 MHz

OPTIONAL ACCESSORIES

Directional Antennas

RA-150 148-152 MHz Folded Yagi Antenna w/ Grip

RA-159 158-161 MHz Folded Yagi Antenna w/ Grip

RA-165 163-166 MHz Folded Yagi Antenna w/ Grip

RA-170 169-172 MHz Folded Yagi Antenna w/ Grip

RA-216 216-222 MHz Folded Yagi Antenna w/ Grip

Non-Directional Antenna

RA-9 Magnetic Mount Antenna 148-174MHz

Headset

RA-13 Monaural Headset

WARRANTY

The R-1000 is warranted to be free of defects in materials and workmanship for a period of one (1) year from the date of purchase. Please call or email Communications Specialists for authorization prior to sending units in for repair.

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