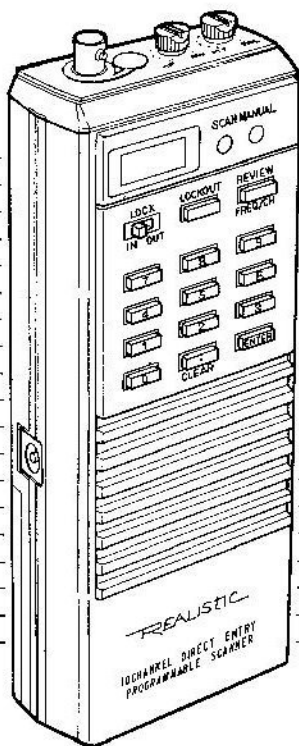# PRO-41

10-Channel Direct Entry Programmable Scanner

OWNER'S MANUAL

Please read before using this equipment

Cat. No. 20-301

REALISTIC®

INTRODUCTION

Your PRO-41 Programmable Scanner lets you hear all the action. This scanner lets you access over 20,000 frequencies that include the police department, fire department, ambulance service, amateur radio, and transportation services. You can store frequencies in your scanner's 10 channels and you can change your selections at any time.

The secret to your scanner's ability to scan so many frequencies is its custom-designed microprocessor—a tiny, built-in computer. Your scanner's microprocessor also gives your scanner these features:

Liquid-Crystal Display—shows the selected channel and frequency.

Automatic 3-Second Scan Delay—helps keep you from missing replies on a channel while you are scanning.

Memory Backup—keeps the channel frequencies stored in your scanner's memory for up to 30 minutes without the batteries.

Low Battery Alarm—lets you know when the batteries get low.

Your PRO-41 covers all these bands:

- 29-50 MHz (VHF Lo)
- 148-174 MHz (VHF Hi)
- 50-54 MHz (6-Meter Ham Band)
- 406-450 MHz (ham radio and government)
- 137-144 MHz (Government)
- 450-470 MHz (UHF Lo)
- 144-148 MHz (2-Meter Ham Band)
- 470-512 MHz (UHF Hi)

For your important records, please record your scanner's serial number in the space provided. The serial number is located on the bottom of the scanner.

Serial Number: _____

CONTENTS

Your scanner might cause radio or TV interference, even when it is operating properly. To determine whether your scanner is causing the interference, turn off your scanner. If the interference goes away, your scanner is causing the interference. Try to eliminate the interference by:

- Moving your scanner away from the receiver
- Contacting your local Radio Shack store for help

If you cannot eliminate the interference, the FCC requires that you stop using your scanner.

PREPARATION

POWER SOURCES

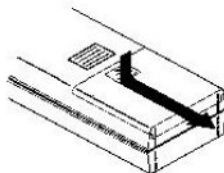You can power your scanner from any of the following three sources:

- Internal batteries
- A standard AC outlet (using an optional AC adapter)
- Your vehicle's battery (using an optional DC adapter)

Using Batteries

You can operate your scanner from five AA batteries. For longest operation and best performance, we recommend alkaline batteries (Radio Shack Cat. No. 23-552). Or, you can use rechargeable nickel-cadmium batteries (Cat. No. 23-125).

Warning: The scanner has a built-in circuit that lets you recharge nickel-cadmium batteries inside the scanner. However, you must never use this circuit when you have installed non-rechargeable batteries in the scanner. Be sure to set the switch in the battery compartment to the correct position for the type of batteries you install.

|	
1. Remove the battery compartment cover by pressing down on the arrow and sliding the cover in the direction of the arrow.	
2. Remove the battery holder from the compartment and remove any old batteries. Then, install five AA batteries, observing the polarity (+ and −) marked on the battery holder.	
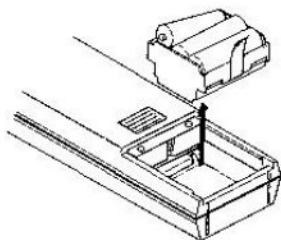
3. Set the switch in the battery compartment to the correct position for the type of batteries you install. Set the switch to REG ALK BATT if you install regular or alkaline type batteries. Set the switch to NI-CAD BATT if you install nickel-cadmium type batteries.

   Caution: Never set this switch to NI-CAD BATT when you install non-rechargeable batteries. If you attempt to recharge non-rechargeable batteries, they become very hot and might damage your scanner or even explode.
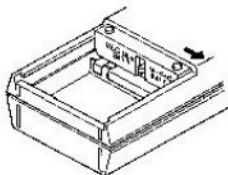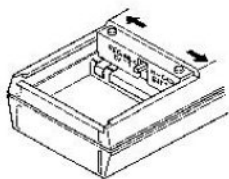
4. Place the battery holder in the compartment so that the holder's metal contacts line up with the metal contacts in the battery compartment.
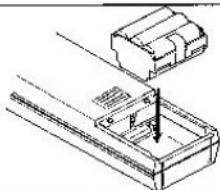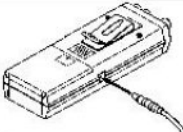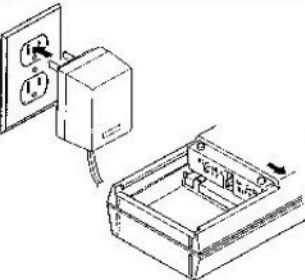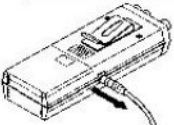
5. Replace the battery compartment cover.

   Your scanner beeps every 15 to 30 seconds when the batteries are low. When this happens, immediately replace or recharge all five batteries.

Using an AC Power Source

To power your scanner from AC power, you need Radio Shack's AC adapter (Cat. No. 273-1652). Use of another adapter could damage your scanner or the adapter.

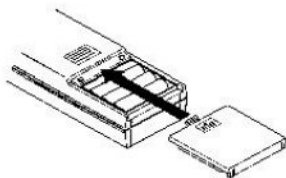|	
1. Be sure that you have set the switch in the battery compartment to the correct position. (See "Installing or Replacing Batteries.")	
2. Connect the adapter's green barrel plug to the adapter's cord and set the barrel plug's tip polarity to positive.	
3. Insert the adapter's plug into your scanner's EXT PWR jack.	
4. Insert the adapter power module into a standard AC outlet. This provides power to operate your scanner. Also, if you have installed rechargeable batteries and set the switch in the battery compartment to NI-CAD BATT, the adapter charges the batteries in your scanner.	
5. When you finish using the AC adapter, disconnect it from the AC outlet. Then, disconnect it from the EXT PWR jack.	

Using a DC Adapter

You can power your scanner from your vehicle's cigarette lighter socket, provided the vehicle has a 12-volt negative-ground electrical system. To do so, you need Radio Shack's Power Cord Set (Cat. No. 270-1533).

Note: In some areas, mobile use of a scanner is unlawful or requires a permit. Check the laws in your area.

1. Ensure that you have set the switch in the battery compartment to the correct position. (See "Installing or Replacing Batteries.")	
2. Plug the adapter's plug into your scanner's EXT PWR jack.	
3. Insert the other end of the adapter into your vehicle's cigarette lighter socket. This provides power to your scanner. Also, if you have installed rechargeable batteries and set the switch in the battery compartment to Ni-CAD BATT, the adapter charges the batteries in your scanner.	
4. When you finish using the DC adapter, disconnect it from the cigarette lighter socket. Then, disconnect it from your scanner.	
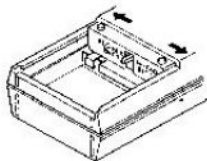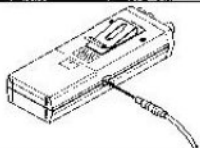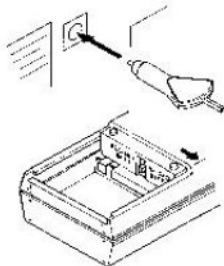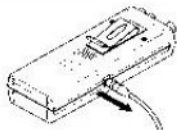
Note: Do not let the adapter's plug touch any part of your vehicle while the adapter is plugged into the cigarette lighter socket. Doing so could blow a fuse or damage the adapter.

CHARGING NICKEL-CADMIUM BATTERIES

Your scanner has a built-in circuit that recharges nickel-cadmium batteries. To charge the batteries, set the switch in the battery compartment to NI-CAD BATT, install the batteries in the scanner, and connect an external power adapter to your scanner, as explained in "Power Sources."

Caution: Do not connect either adapter to the EXT PWR jack if you have not installed rechargeable batteries, and are unsure of the position of the switch in the battery compartment, or know that the switch is set to NI-CAD BATT. Non-rechargeable batteries can become hot and even explode if you try to recharge them.

It takes 10 to 18 hours to recharge batteries that are fully discharged. You can operate your scanner while recharging nickel-cadmium batteries, but the charging time is longer.

Charging Hints:

- Nickel-cadmium batteries deliver more power if you occasionally let them discharge completely. To do this, use the scanner until reception becomes poor. Then, fully charge the batteries. If you do not do this occasionally, they can temporarily lose the ability to deliver full power.

- To prevent permanent nickel-cadmium battery power loss, never charge your batteries in an area where the temperature is above about 80 degrees Fahrenheit. Also, if you use an external charger, do not overcharge the batteries.

- If you plan to use rechargeable batteries, do not use any adapter other than those specified in "Power Sources." While adapters of the same voltage rating and at least the minimum current rating could power the scanner, other adapters might not work properly with the

charging circuit in your scanner, and could permanently damage the batteries or your scanner.

- The first time you use a set of nickel-cadmium batteries, charge them at least 24 hours to bring them to a full charge.

CONNECTING THE ANTENNA

Attach the flexible antenna to the antenna jack on top of the scanner. Slip the slot in the antenna's connector over the protrusion on the jack. Then, press down and rotate the base of the antenna until it locks into place.
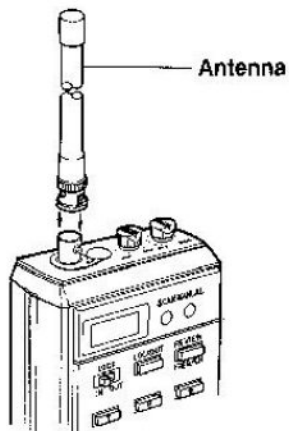
Antenna

Your scanner's antenna jack makes it easy to use your scanner with a variety of antennas. You can remove the supplied antenna and attach a different one, such as an external mobile antenna, telescopic antenna, or outdoor base antenna. Radio Shack stores sell the antenna connector adapters that let you use these antennas.

Use coaxial cable to connect an outdoor antenna. Always use 50-ohm coaxial cable. For lengths over 50 feet, use RG8 low-loss dielectric coaxial cable.

Warning: When installing or removing an outdoor antenna, use extreme caution. If the antenna starts to fall, let it go! It could contact overhead power lines. If the antenna touches the power line, contact with the antenna, mast, cable, or guy wires can cause electrocution and death! Call the power company to remove the antenna. Do not attempt to do so yourself.

ATTACHING THE BELT CLIP

You can connect the supplied belt clip to your scanner to make it easier to use your scanner when you are on the go. Connect the clip to your scanner with the two provided screws.

Belt Clip
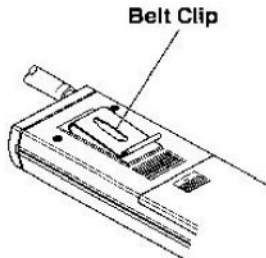
CONNECTING AN EARPHONE

Follow these steps to use the earphone for private listening:

1. Turn the volume control to its minimum position.

2. Plug an earphone into the EAR jack on top of your scanner. This automatically disconnects the speaker. We recommend Radio Shack's earphone Cat. No. 33-175. In a noisy environment, mono headphones (Cat. No. 20-210) make listening easier.

3. Adjust the volume to a comfortable level.

Warning: Do not listen at extremely high volume levels, especially when using an earphone. Extended high-volume listening can lead to permanent hearing loss.

Earphone
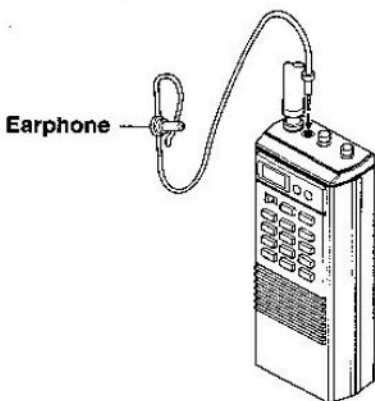
CONNECTING AN EXTENSION SPEAKER

In a noisy area, an extension speaker positioned in the right place, might provide more comfortable listening. Plug the speaker cable's 1/8-inch mini-plug into the scanner's EAR jack.

Extension Speaker
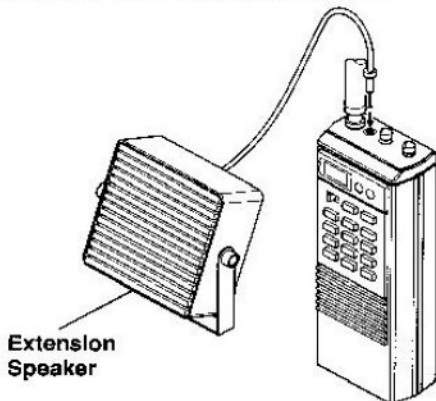
OPERATION

USING THE KEY LOCK

Once you program your scanner, you can protect it from accidental program changes by moving the **LOCK** switch to **IN**. In this position, the only controls that operate are **VOLUME**, **SQUELCH**, **MANUAL**, and **SCAN**.

When you want to change the scanner's programming, move the **LOCK** switch to **OUT**.

PROGRAMMING THE SCANNER

Follow these steps to store frequencies in channels.

1. Select a channel to program by pressing **MANUAL**, entering the channel number you want to program, and pressing **MANUAL**.	
2. Enter a frequency. To enter the decimal, press **./CLEAR**. The decimal point is displayed as a dash (-) on the display. 3. Press **ENTER** to store the frequency. If you made a mistake in Step 2, E appears on the display. Press **./CLEAR** twice and repeat Step 2.	
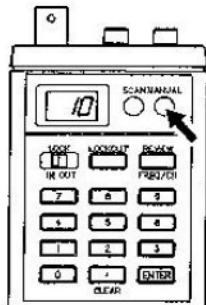
12
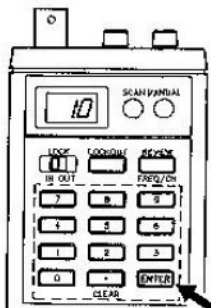
4. To confirm the proper entry, press **REVIEW**. The programmed frequency appears on the display, one digit at a time.

5. To program more channels, repeat Steps 1 to 3. If you want to program the next channel in sequence, simply press **MANUAL** and repeat Steps 2-4.
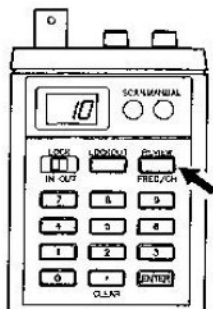
Tips for Programming

- A good reference for active frequencies is Radio Shack's Police Call Directory including Fire and Emergency Services.

  We update this directory every year, so be sure to get a current copy.

- Frequencies in the VHF bands are in 5 kHz steps. In the UHF bands, they are in 12.5 kHz steps. The scanner automatically rounds the frequency to the nearest valid number. For example, if you try to enter a frequency of 151.473, your scanner accepts it as 151.475.

SETTING THE VOLUME AND SQUELCH CONTROLS

Rotate **VOLUME** clockwise and **SQUELCH** counterclockwise until you hear a hissing sound. Then, slowly rotate **SQUELCH** clockwise until the noise stops. Set **VOLUME** to a comfortable level.

If the scanner picks up unwanted weak transmissions, rotate **SQUELCH** clockwise to decrease the scanner's sensitivity to signals.

SCANNING THE CHANNELS

To begin scanning the channels, press **SCAN**. Your scanner scans through all the channels except the ones you have locked out. Be sure to read the following sections to get the full benefit from your scanner's special features.

LOCKING OUT CHANNELS

You can make your scanner scan more efficiently by locking out channels that you have not programmed. Enter the channel number you wish to lock out, press **MANUAL** and then press **LOCK OUT** so that the **LOCK OUT** indicator lights. This is also handy for locking out channels that have a continuous transmission. You can still manually select locked-out channels for listening.

To unlock a channel you have locked, manually select the channel and press **LOCK OUT** so that the **LOCK OUT** indicator goes off.

MANUALLY SELECTING A CHANNEL

You can continuously monitor a single channel without scanning. This is useful if you hear an emergency broadcast on a channel and do not want to miss any of the details—even though there might be periods of silence—or if you want to monitor a channel that you have locked out.

To select a channel to monitor, press **MANUAL** and advance through the channels by pressing **MANUAL** repeatedly, or move directly to a channel by entering the channel number on the keypad then pressing **MANUAL**. If your scanner is scanning and has stopped at the desired channel, press **MANUAL** one time.

AUTOMATIC SCAN DELAY

Your scanner stops when it finds a signal. It begins scanning other channels about 3 seconds after the signal ends. The 3-second delay gives you a chance to receive a reply to the first signal.

A GENERAL GUIDE TO SCANNING

BIRDIES

Birdies are the products of internally generated signals that make some frequencies difficult or impossible to receive. If you program one of these frequencies, you hear only noise on that frequency.

If the interference is not severe, you might be able to cut out the birdie by turning the **SQUELCH** control clockwise. The most common birdies to watch for are listed below.

    30.300 MHz
    31.200 MHz
    32.500 MHz
    41.600 MHz
    52.000 MHz

RECEPTION NOTES

Your scanner receives signals that are mainly "line of sight." That means that you usually cannot hear stations at your listening location that extend beyond the horizon.

During the summer, you might hear stations in the 30-50 MHz range located several hundred or even thousands of miles away. This phenomenon is known as skip, and is caused by summer atmospheric conditions. This type of reception is unpredictable but often very interesting.

One useful service is the National Oceanic Atmospheric Administration (NOAA) Weather Radio's continuous weather broadcasts. These broadcasts advise you of the current weather conditions, weather predictions, and also contain information about any threatening weather. These stations use three frequencies—162.40, 162.475, and 162.55 MHz. In most areas of the country, you can receive one or more of these frequencies.

GUIDE TO THE ACTION BANDS

With the right frequencies programmed into your scanner, you can monitor exciting events. With a little investigation, you can find active frequencies in your community. We can give you some general pointers, and you can take it from there. Please use caution and common sense when you hear an emergency call. Never go to the scene of an emergency—it could be the most dangerous thing you could ever do.

Find out if there is a local club that monitors these frequencies. Perhaps a local electronics repair shop that works on similar equipment can give you the frequencies used by local radio services. A volunteer police or fire employee can also be a good source of this information.

As a general rule on VHF, most activity is between 153.785 and 155.98 MHz and then again between 158.73 and 159.46 MHz. Here you find local government, police, fire, and most such emergency services. If you are near a railroad yard or major railroad tracks, look between 160.0 and 161.9 MHz for signals.

In some larger cities, there has been a move to the UHF bands for these emergency services. Here, most of the activity is between 453.025 and 453.95 MHz and again between 456.025 and 459.95 MHz.

In the UHF band, the range between 456.025 and 459.95 MHz and again between 465.025 and 469.975 MHz is used by mobile units and control stations associated with base and repeater units that operate 5 MHz lower (that is, between 451.025 and 454.95 and between 460.025 and 464.975 MHz). This means that if you find an active channel inside one of these spreads, you can look 5 MHz lower (or higher, as the case may be) to find the major base station/repeater for that radio service.

TYPICAL BAND USAGE

The following is an abbreviated listing of what's going on in the frequency ranges your PRO-41 can receive. It'll help you decide which ranges you'd like to choose.

Abbreviations

Affiliate Radio System	MARS
Amateur	Ham
Automobile Emergency	Auto Emer.
Broadcast Remote	BC. R.
Bureau of Reclamation	Bur. Recl.
Civil Air Patrol	CAP
Department of Agriculture and Forestry	Agr. and For.
Fire Department	F.D.
Forest Products	For. Prod.
Forestry Conservation	Fors. Cons.
Government	Govt.
Highway Maintenance	Hwy.
Land Transportation	Land Tr.
Local Government	L.Govt.
Manufacturers	Mfg.
Military	MIL
Mobile Telephone	Mob. Tel.
Motion Picture	Mot. P.
Motor Carrier	Buses. Trucks
National Parks	Nat. Park
Petroleum	Pet.
Police	P.D.
Power Utilities	Power
Radio Paging	Page
Railroad	R.R.
Relay Press	Press
State Police	St. P.D.
Special Emergency	Sp. Ind.
Taxicab Radio	Taxi
Telephone Maintenance	Tel. Maint.
U.S. Coastal and Geodetic Survery	U.S.C.G.S.
U.S. Navy	USN
U.S. Weather Bureau	U.S.W.B.

29 - 54 MHz BAND

29.00 - 29.70	10-meter HAM
29.70 - 29.89	For. Prod.
29.80 - 30.00	Aero.
30.01 - 30.56	Govt.
30.56 - 30.62	Sp. Ind.
30.66 - 31.24	Ind. (Pet., For. Cons., Bus., For. Prod.)
31.26 - 31.98	Sp. Ind., For. Cons.
32.00 - 33.00	Govt.
33.02 - 33.16	Hwy., Sp. Emer., Bus.
33.18 - 33.38	Pet.
33.42 - 33.98	F.D.
34.00 - 35.00	Govt.
35.02 - 35.18	Bus.
35.22 - 35.66	Mob. Tel. & Page
35.70 - 35.72	Bus.
35.74 - 35.98	Sp. Ind. & Bus
36.00 - 37.00	Govt.
37.02 - 37.44	P.D. & L. Govt.
37.46 - 37.86	Power
37.90 - 37.98	Hwy. & Sp. Emer.
38.00 - 39.00	Govt.
39.02 - 39.98	P.D., L. Govt.
40.00 - 42.00	Govt.
42.02 - 42.94	St. P.D.
42.96 - 43.18	Sp. Ind. & Bus.
43.22 - 43.68	Mob. Tel. Page
43.70 - 44.60	Trucks. Bus.
44.62 - 45.06	St. P.D., For. Cons.
45.08 - 45.66	P.D.
45.68 - 46.04	P.D. Hwy., Sp. Emer.
46.06 - 46.50	F.D.
46.52 - 46.58	L. Govt.
46.60 - 47.00	Govt.
47.02 - 47.40	St. Hwy.
47.42	Red Cross
47.44 - 47.68	Sp. Ind. Sp. Emer.
47.70 - 48.54	Power
48.56 - 49.58	For. Prod., Pet.
49.60 - 50.00	Govt.
50.00 - 54.00	6-Meter Amateur (Ham) Band

137 - 174 MHz BAND

Frequency	Allocation
137.000 – 144.000	Govt.
144.000 – 148.000	2-Meter HAM
148.010	MARS
148.150	CAP
148.155 – 148.250	MIL
148.290 – 150.750	USN
150.815 – 150.995	Bus.
151.010 – 151.130	HWY
151.145 – 151.475	For. Cons.
151.505 – 151.595	Sp. Ind.
151.625 – 151.955	Bus.
151.985 – 152.240	Mob. Tel. (RCC)
152.270 – 152.450	Taxi
152.480 – 152.840	Mob. Tel. Page
152.870 – 153.020	Sp. Ind. Mot. P.
153.050 – 153.440	Pet., For. Prod.
153.470 – 153.710	Power
153.740 – 154.115	L. Govt.
154.130 – 154.445	F.D.
154.450 – 154.600	Sp. Ind., Pet., Bus.
154.655 – 155.145	P.D., L. Govt., St. P.D.
155.160 – 155.400	Sp. Emer., P.D.
155.415 – 156.030	P.D., L. Govt.
156.045 – 156.240	Hwy., P.D.
156.275 – 157.425	Marine
157.456 – 157.500	Auto Emer.
157.530 – 157.710	Taxi
157.740 – 158.100	Mob. Tel., Page
158.130 – 158.460	Power, For. Prod., Pet.
158.490 – 158.700	Mob. Tel. (RCC)
158.730 – 158.970	P.D., L. Govt.
158.985 – 159.210	P.D. Hwy.
159.225 – 159.465	For. Cons.
159.510 – 160.200	Trucks
160.215 – 161.565	R.R.
161.600 – 162.000	Marine
162.026 – 162.175	Bur. Recl.
162.400	U.S.W.B.
162.550 –	U.S.W.B.
163.125 –	Indian Affairs
163.175 –	Bur. Recl.
163.275	U.S.W.B.
163.388 – 163.538	MIL
163.825 – 163.975	Govt.

Frequency	Allocation
164.025 – 164.075	U.S.C.G.S.
164.175 – 165.188	Bur. Recl. Nat. Pk. Govt., Agr. & For.
169.300	F.A.A.
169.450 – 169.725	Ind., Data
170.150	F.D., BC. R.
170.200 – 170.220	U.S.C.G.S.
170.225 – 170.325	Ind., Land Tr.
170.425 – 170.575	For. Cons.
170.975 – 171.250	Govt. Ind., Land Tr.
171.368 – 172.725	Bur. Recl., For. Cons., Ind., Dept. Ag. & For., Govt.
172.775	Nat. Pk.
173.025	U.S.W.B.
173.075	U.S.C.G.S.
173.204 –	Mot. P., Pet., Bur. Recl. Press Relay.

406 - 512 MHz BAND

Frequency	Allocation
406.000 – 420.000	Govt.
420.000 – 450.000	HAM
450.050 – 450.950	Remote Br.
451.000 – 451.150	Util.
451.175 – 451.750	For. Prod., Pet., Power., Tel. Maint.
451.775 – 451.975	Spec. Ind.
452.000 – 452.500	Taxi, Mot. Carrier, R.R.
452.525 – 452.600	Auto Club
452.625 – 452.975	Motor Carr., R.R.
453.000 – 453.975	L. Govt., P.D., F.D.
454.000 – 454.975	Mob. Tel.
455.000 – 455.975	Remote Br.
456.000 – 458.975	P.D., F.D., Ind., Lan. Tr.
459.000 – 459.975	Domestic Public
460.000 – 460.625	P.D., F.D.
460.650 – 462.175	Bus.
462.200 – 462.450	Taxi
462.750 – 462.975	Bus.
463.000 – 463.175	Medical
463.200 – 464.975	Bus.
465.000 – 467.500	P.D., F.D., Ind., Land Tr.

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467.750 - 467.925 . . . . . . . . . . .  Bus.
467.7375 - 469.975 . . . . .  Pub. Safety,
                              Ind.,Land Tr.
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TV Bands for Special Communications

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470 - 476 T.V. Channel 14
476 - 482 T.V. Channel 15
482 - 488 T.V. Channel 16
488 - 494 T.V. Channel 17
494 - 500 T.V. Channel 18
500 - 506 T.V. Channel 19
506 - 512 T.V. Channel 20
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6 MHz Segment is allocated for Channel 14

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470.0125 - 470.2875 . Domestic Public,
                              (Base, Mob.)
470.3125 - 471.1375 . . .  Public Safety
471.1625 - 471.2875 . . Reserve Pool A
471.3125 - 471.4125 . Pwr., Tel. Maint.
471.4375 - 471.6375 . . . . . . Spec. Ind.
471.6625 - 471.7875 . . Reserve Pool B
471.8125 - 472.3375 . . . . . . . . . . .  Bus.
472.3625 - 472.4375 . . . . . . . . .  Taxi
472.4675 - 472.7875 . . . . . R.R., Motor
                                   Carrier,
                                 Auto Emer.
472.8125 - 472.9875 . Pet., For. Prod.,
                                      Mfg.
473.0125 - 473.2875 . Domestic Public
473.3125 - 474.1375 . . .  Public Safety
474.1625 - 474.2875 . . Reserve Pool A
474.3125 - 474.4125 . Pwr., Tel. Maint.
474.4375 - 474.6375 . . . . . . Spec. Ind.
                                  (Mobile)
474.6625 - 474.7875 . . Reserve Pool B
474.8125 - 475.3375 . . . . . . . . . . .  Bus.
475.3625 - 475.4375 . . . . . . . . . . .  Taxi
475.4625 - 475.7875 . . . . . R.R., Motor
                         Carrier, Auto Emer.
475.8125 - 475.9876 . . Pet., For. Prod.
                                      Mfg.
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The same allocation pattern is repeated for each of the TV Channels 14 through 20. For example, if Channel 17 is assigned for communications in your area, taxi would be 490.3625 to 490.4375 and 493.3625 to 493.4375 (corresponding to 472.3625 to 472.4375 and 475.3625 to 475.4375 above). Note that in the example, we added three TV channels (18 MHz) to the channel 14 frequencies.

CARE AND MAINTENANCE

Your PRO-41 is an example of superior design and craftsmanship. The following suggestions will help you care for the scanner so that you can enjoy it for years.

Keep the scanner dry. If it does get wet, wipe it dry immediately. Liquids can contain minerals that can corrode the electronic circuits.

Use and store the scanner only in normal temperature environments. Temperature extremes can shorten the life of electronic devices, damage batteries, and distort or melt plastic parts.

Handle the scanner gently and carefully. Dropping it can damage circuit boards and cases and can cause the scanner to work improperly.

Keep the scanner away from dust and dirt, which can cause premature wear of parts.

Wipe the scanner with a dampened cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the product.

Use only fresh batteries of the recommended size and type. Always remove old or weak batteries. They can leak chemicals that destroy electronic circuits.

Modifying or tampering with the scanner's internal components can invalidate the product's warranty and might void your FCC authorization to operate it. If your product is not performing as it should, take it to your local Radio Shack store. Our personnel can assist you and arrange for service if needed.

BEFORE YOU CALL FOR HELP

The frequencies stored in the PRO-41 memory can be held for approximately 30 minutes without AA batteries or adapter power. Check memory contents after replacing batteries.

If you have problems...

We hope you don't—but here are some suggestions.

TROUBLE	CHECK
Unit does not turn on/no power.	1. Batteries are not correctly installed—check to be sure the + and − terminals are properly aligned. 2. Batteries are dead—replace with new ones.
No reception/poor reception.	1. Antenna is not correctly installed—check connector. 2. Environment is not suitable for scanner—relocate unit and try again. 3. Frequencies are not properly programmed—check and reprogram. 4. Batteries are weak or dead—replace with new ones.
E appears in display.	1. Programming error—check frequency and try again.
Beep tone sounds every 15-30 seconds.	1. Batteries are low—replace with new ones.
Keypad does not work/ cannot program.	1. Keypad is locked—check and set the **LOCK** switch to **OUT**.

If none of these suggested remedies solves the problem, return your scanner to your nearby Radio Shack store for assistance.

SPECIFICATIONS

Frequency Coverage:
VHF-Lo. . . . . 29-50 MHz (in 5 kHz steps)
Ham. . . . . 50-54 MHz (in 5 kHz steps)
Government . . . . 137-144MHz (in 5 kHz steps)
Ham. . . . . 144-148 MHz (in 5 kHz steps)
VHF-Hi. 148-174 MHz (in 5 kHz steps)
Ham/Gov't . . . . 406-450 MHz (in 12.5 kHz steps)
UHF-Lo. . . . . 450-470 MHz (in 12.5 kHz steps)
UHF-Hi ("T") . . . . 470-512 MHz (in 12.5 kHz steps)

Channels of Operation . Any 10 channels in any band combinations

Sensitivity (FM:20 dB Signal-to-Noise ratio at 3 kHz deviation):
29-54 MHz . . . . 0.3 μV
137-174 MHz. . . . . 0.7 μV
406-512 MHz. . . . . 0.7 μV

Selectivity:
± 10 kHz. . . . . -6 dB
± 17 kHz. . . . . -50 dB

IF Rejection:
10.85 MHz . . . . .45 dB at 155 MHz

Scanning Rate. . . . . 10 channels/sec.

Delay Time . . . . 3 seconds

Modulation Acceptance. . . . . ± 12 kHz

IF Frequencies. 10.85 MHz and 450 kHz

Filters. . . . . 1 crystal filter,
1 ceramic filter

Squelch Sensitivity:
Threshold . . . . Less than 1.8 μV
Tight. . . . . (S + N)/N 15 dB

Antenna Impedance . . . . 50 ohms

Audio Power . . . . , ... 260 mW nominal

Built-In Speaker . . . . . 1 2/3 inches (4.2 cm) 7.2 ohm, dynamic type

Power Requirements:
DC . . . . 5-AA Batteries 7.5 VDC (not included)
 or 5-AA Rechargeable Ni-Cad Batteries 6.0 VDC (not included)
AC . . . . .AC Adapter Cat. No.273-1652 (not included).

Current Drain:
Squelched. . . . . .35 mA
Full Volume Unsquelched . . . . .110 mA

Dimensions . . . . .7 x 2 5/8 x 1 3/8 inches (HWD)
 (178 x 67 x 35 mm)

Weight . . . . 11.2 oz (298 g)

RADIO SHACK
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