PRO-2023
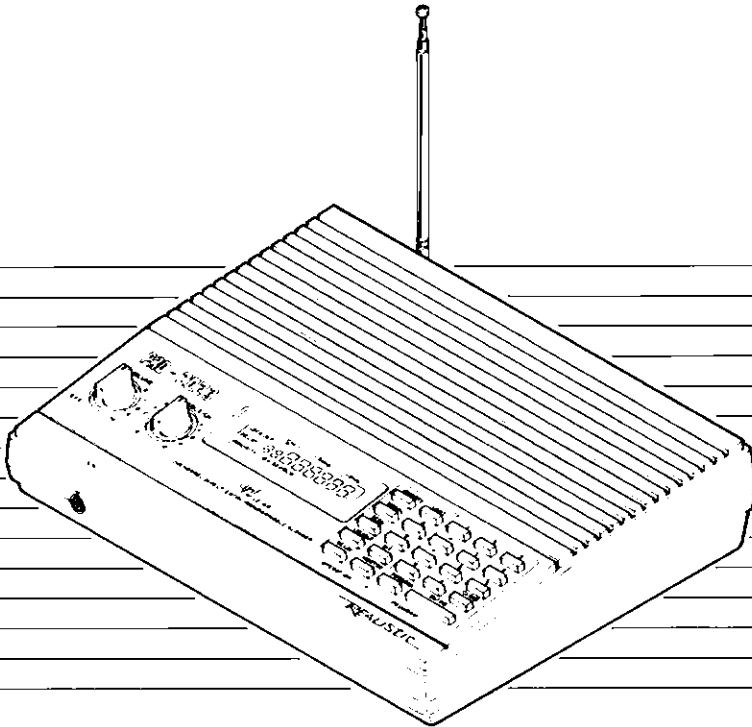
20-Channel Direct Entry Programmable Scanner

OWNER'S MANUAL

Please read before using this equipment

REALISTIC®

INTRODUCTION

Your new Realistic® PRO-2023 20-Channel Direct Entry Programmable Scanner lets you in on all the action! This scanner gives you direct access to over 22,000 exciting frequencies that include the police department, fire department, ambulance, amateur radio, and transportation services. You can select up to 20 channels for your scanner to scan and you can change your selection 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 special features:

Liquid Crystal Display—shows the channel and the frequency you have selected plus several other indicators.

Two-Second Scan Delay—helps to prevent the loss of replies on a channel while you are scanning.

Memory Backup—keeps the channel frequencies stored in your scanner's memory for up to three days if a power failure occurs.

Lock-Out Function—lets your scanner skip over specified channels.

Priority Channel—helps keep you from missing important calls on Channel 1.

Weather Band Key—lets your scanner scan the preprogrammed weather frequencies to keep you informed of the most current weather conditions.

Your scanner covers all of these bands:

- 29-29.7 MHz (ham radio 10 m)
- 29.7-50 MHz (VHF Lo)
- 50-54 MHz (ham radio 6 m)
- 108-136 MHz (aircraft)
- 136-144 MHz (government)
- 144-148 MHz (ham radio 2 m)
- 148-174 MHz (VHF Hi)
- 406-450 MHz (ham radio and government)
- 450-470 MHz (UHF Lo)
- 470-512 MHz (UHF Hi)

CONTENTS

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

Serial Number: _____

A QUICK LOOK AT YOUR PRO-2023

FRONT PANEL

SCAN Key

PRIORITY Key

MANUAL Key

Multi-Purpose Display

▲ (up). ▼ (down) and LIMIT Keys

SQUELCH Control

Number Keys

OFF/VOLUME Control

CLEAR Key

ENTER Key

Headphone Jack

PROGRAM Key

LOCK OUT Key

WX (Weather band) Key

DELAY Key

MONITOR Key

REAR PANEL

ANT (Antenna) Jack

Household AC Outlet

RESET Switch

AC Line Cord
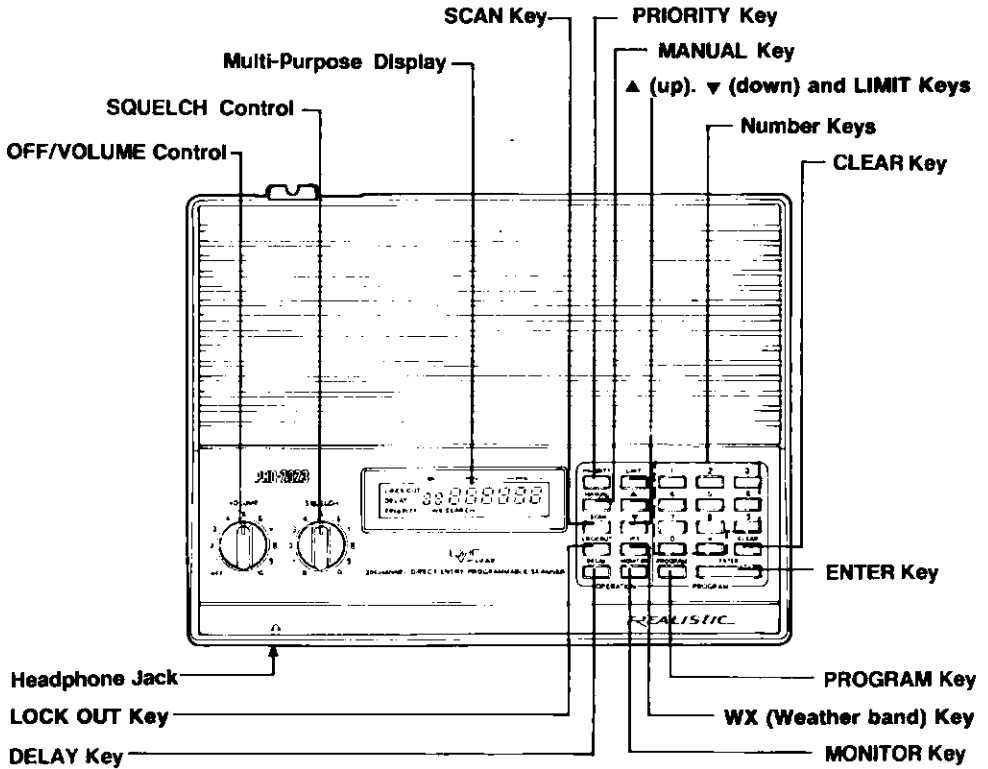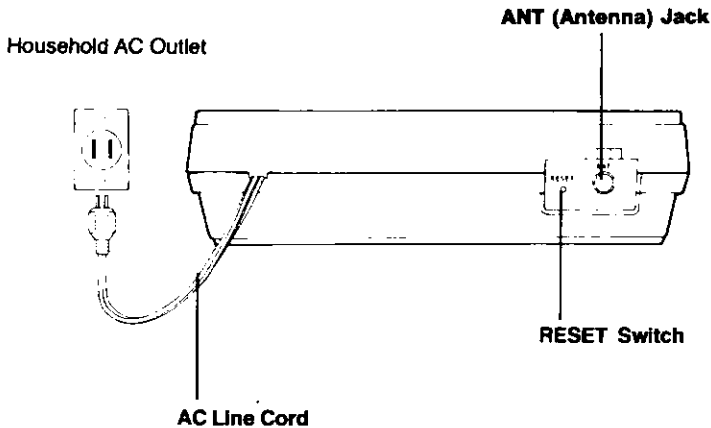
PREPARATION

CONNECTING THE ANTENNA

We provided a telescoping antenna capable of receiving strong local signals with your scanner. To install it, simply plug it into the hole on the back of your scanner.

Antenna length affects the sensitivity of your scanner to different frequencies. Refer to the table below to adjust the length of the antenna for best reception at the listed frequencies.

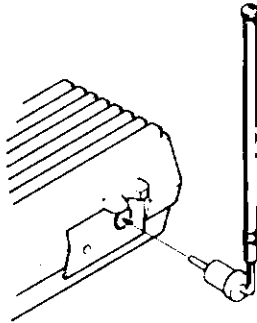| 29 – 54 MHz	extend fully
108 – 174 MHz	extend 3 segments
406 – 512 MHz	collapse fully (one segment only)

To achieve better reception on all bands, attach a multiband outdoor antenna to your scanner. Radio Shack® stores sell a complete line of multiband outdoor antennas for your specific needs.

To install an outdoor antenna:
1. Select the highest possible location for the antenna.
2. Mount the antenna following the instructions that came with the antenna and its mounting hardware.
3. Connect the antenna to the scanner using 50-ohm coaxial cable (RG-58 or RG-8). For lengths over 50 feet, use RG-8 low-loss, 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.

You can also use multiband antenna amplifiers to improve your reception. Consult with your local Radio Shack stores for the antenna systems.

5

CONNECTING TO POWER

Connect the scanner's AC power cord to a standard AC outlet.

Household AC Outlet
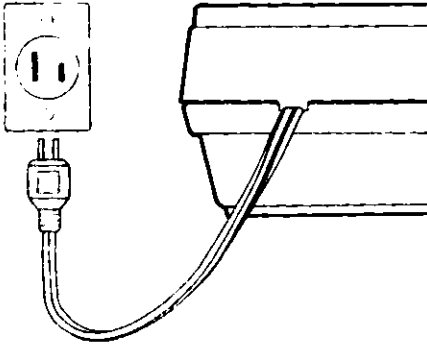
It initially takes the memory backup circuit 24 hours to become fully functional. If the scanner is without power for about 3 days it again takes 24 hours to become fully functional. During a power failure, or if you disconnect the power cord, the circuit holds memory for about three days.

CONNECTING HEADPHONES

For listening privately or in a noisy environment, plug headphones (not supplied) into the headphone jack on the front of your scanner. We recommend a mono headset, available at your local Radio Shack store. You automatically disconnect the internal speaker when you plug in the headphones.

Use caution when you connect headphones to your scanner. Before you put on the headphones, turn down the scanner's volume. Then, adjust the volume to a comfortable level.
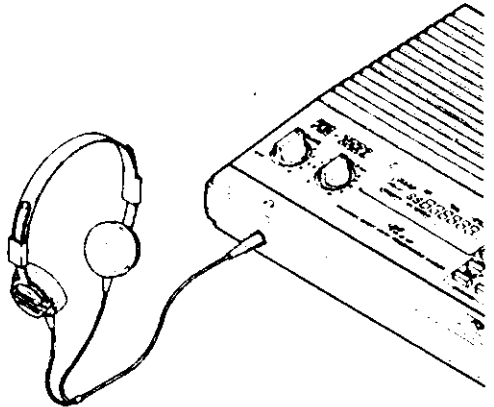
UNDERSTANDING YOUR SCANNER

A LOOK AT THE DISPLAY
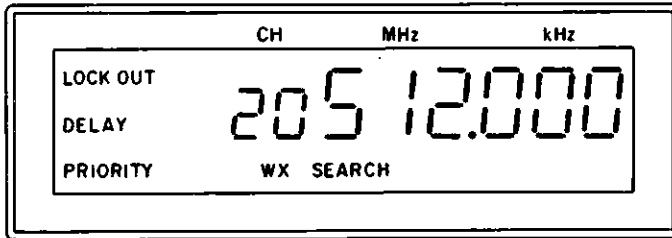
The display has several abbreviated indicators that show the scanner's current operating mode. The above illustration shows your scanner's display with all indicators on. The following is a brief explanation of the indicators.

LOCK OUT—appears when the channel you are listening to is locked out of the scan mode. See "Locking Out a Channel."

DELAY—appears when the scanner is on a channel that you have programmed with the delay feature. See "Using the Delay Feature."

WX SEARCH—appears when the scanner is in the weather band mode.

PRIORITY—appears when the scanner is in the priority mode.

– – –appears during a search. **Lo** and **Hi** also appear in the display to prompt you to enter the lower and upper limit frequencies.

CH—indicates the current channel.

MHz/kHz—indicates which frequency your scanner is currently tuned to.

Error—appears when you made an incorrect entry.

A LOOK AT THE KEYBOARD
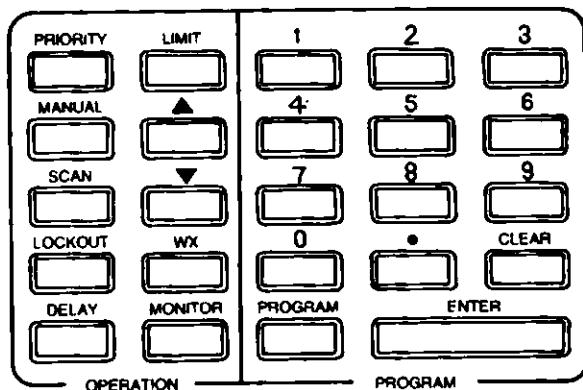
SCAN—causes your scanner to scan through the programmed channels.

LOCK OUT—turns on the lock-out function. See "Locking Out a Channel."

DELAY—turns the delay feature on or off for the current channel.
See "Using the Delay Feature."

PRIORITY—turns the priority feature on or off for Channel 1.

MANUAL—stops the scanning and allows you to directly enter a channel number.

▲, ▼, **and LIMIT**—search for active frequencies within a specified range. See "Searching for Active Frequencies."

Number Keys—used to enter a channel number or a frequency.

CLEAR—deletes an incorrect entry.

ENTER—enters the frequency when programming channels.

PROGRAM—programs frequencies into channels.

WX—causes your scanner to scan through the weather channels.
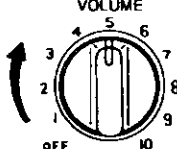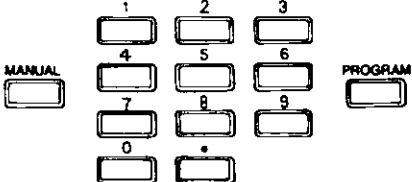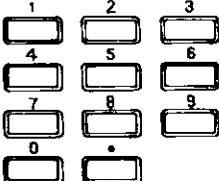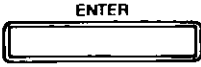
MONITOR—accesses the monitor memories. See "Moving a Frequency from Monitor Memory to a Channel."

8

OPERATION

PROGRAMMING YOUR SCANNER

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. Also, refer to "Reception Notes" and "Searching for Active Frequencies" in this manual.

1.Turn on your scanner by turning VOLUME clockwise.	
2.Press [MANUAL], enter the channel number you want to program, then press [MANUAL] and [PROGRAM]. The channel number flashes to indicate you are programming the channel.	
3.Enter a frequency.	
4.Press [ENTER] to store the frequency. If you made a mistake in Step 3, **Error** appears on the display. Proceed again from Step 3.	
5.If you want your scanner to pause after each transmission before scanning to the next channel, press [DELAY] so that **DELAY** appears in the display. See "Using the Delay Feature."	
6.To program more channels, repeat Steps 2-4. If you want to program the next channel in sequence, simply press [PROGRAM] and repeat Steps 3-4.	

9

SETTING THE VOLUME AND SQUELCH CONTROLS

Use the SQUELCH control to decrease your scanner's sensitivity to weak signals. This allows the scanner to receive only the strongest transmissions.

1. Turn the SQUELCH and VOLUME controls fully counterclockwise.

2. Turn the VOLUME control clockwise until you hear a hissing sound.

3. Slowly turn the SQUELCH control clockwise until the hissing stops.

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.

USING THE DELAY FEATURE

Many agencies use a two-way radio system that might have a 2 second silence (or more) between a query and a reply. To keep from missing a reply, program a delay on the channels you identify as operating this way.

To program a delay, select the channel and press [DELAY] so that DELAY appears on the display. Now when your scanner pauses at an active channel when scanning, it waits for 2 seconds after the completion of each transmission on that channel before it resumes scanning.

If you do not want your scanner to pause, select the channel and be sure that DELAY is not on the display. If DELAY appears on the display, press [DELAY] to turn it off for that channel.

LOCKING OUT CHANNELS

You can make your scanner scan more efficiently by locking out channels that you have not programmed. Manually select the channel and press [LOCK OUT] so that LOCK OUT appears on the display. 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 LOCK OUT disappears from the display.

Note: You cannot lock out Channel 1.

USING THE PRIORITY FEATURE

Channel 1 is designated as your scanner's priority channel. You can turn on the priority feature so that you do not miss transmissions on Channel 1, even if you are monitoring another channel.

Press [PRIORITY] so that PRIORITY appears on the display. Now your scanner checks Channel 1 every 2 seconds, and stays on the channel if there is any activity.

10

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] enter the channel number, and then press [MANUAL] again. Or, if your scanner is scanning and has stopped at the desired channel, simply press [MANUAL] one time. Pressing [MANUAL] additional times causes your scanner to step through the channels one at a time.

LISTENING TO THE WEATHER BAND

The FCC (Federal Communications Commision) has allocated several channels for use by the National Oceanic and Atmospheric Administration (NOAA). We have preprogrammed your scanner with all of the frequencies available to NOAA. To hear your local forcast and regional weather information, simply press [WX]. Your scanner begins scanning through the weather band, and WX SEARCH appears on the display.
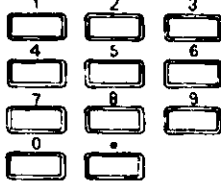
Your scanner should stop within a few seconds, and you hear the local weather broadcast. If the broadcast is weak, you can press [WX] again to scan through the rest of the weather band.

11
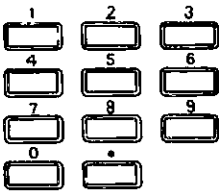
SEARCHING FOR ACTIVE FREQUENCIES

Use this procedure to search for a transmission within a range of frequencies. You must set the frequency range within each band listed below. That is, you cannot set the upper and lower frequencies in different bands. For example, if you set the lower frequency to 30 MHz and set the upper frequency at 110 MHz, the scanner does not accept the entry and the display shows **Error**.

29 MHz to 54 MHz (VHF Lo)
108 MHz to 136 MHz (Air)
136.005 MHz to 174 MHz (VHF Hi)
406 MHz to 512 MHz (UHF)

When you find an interesting frequency, you can store the frequency in the monitor memory and later move it to a channel.

1.Press [PROGRAM].	PROGRAM
2. Press [LIMIT]. Then, press [CLEAR].	LIMIT / CLEAR
3.Enter the lower limit of the frequency range.	1 2 3 4 5 6 7 8 9 0 •
4.Press [ENTER]. Then, press [LIMIT].	ENTER LIMIT

12

5. Enter the upper limit of the frequency range.	
6. Press [ENTER].	ENTER
7. Press ▼ to search from the upper limit down to the lower limit. Or, press ▲ to search upward starting from the lower limit.	▼ ▲
8. When the scanner stops on a transmission, press [MONITOR] to store the frequency in the monitor memory. Or, press ▲ or ▼ to continue the search.	MONITOR ▲ ▼

Note: Press [DELAY] to make the scanner pause 2 seconds after a transmission before proceeding to the next frequency.

13

MOVING A FREQUENCY FROM MONITOR MEMORY TO A CHANNEL

If you want to move a frequency you have stored in the monitor memory to a channel, follow this procedure.

1.Press [MANUAL], the channel number, and then [MANUAL] and [PROGRAM].	
2.Press [MONITOR].	
3.Press [ENTER]. The frequency is stored in the specified channel.	
4.If you want to return to a search after this procedure, press ▲ or ▼ . To return to the manual or program mode, press [MANUAL] or [PROGRAM]. To resume the search from one of the limit frequencies, press [LIMIT], then either ▲ or ▼ to continue.	

USING THE RESET SWITCH

The scanner's display might lock up the first time you plug in and turn on your scanner or if power fails for more than three days. If the display locks up, use a pointed object, such as a paper clip, to press and release the recessed RESET switch (on back panel) while the power is on. This procedure clears all the information you have programmed into the scanner. Use this procedure only when you are sure your scanner is not working properly.

14
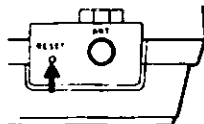
A GENERAL GUIDE TO SCANNING

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.

29.340 MHz
31.200 MHz
33.535 MHz
34.930 MHz
41.600 MHz
41.915 MHz
46.110 MHz
52.000 MHz
124.800 MHz
125.750 MHz

RECEPTION NOTES

Reception of the frequencies covered by your scanner is mainly "line of sight." That means that you usually cannot hear stations at your listening location that extend beyond the horizon.

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

GUIDE TO THE ACTION BANDS

With a little investigation, you can find the active frequencies in your community to monitor exciting events. We can give you some general pointers on finding these frequencies 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 very dangerous.

Find out if there is a local club that monitors your community's frequencies. Perhaps a local electronics repair shop that works on equipment similar to your scanner can give you channel frequencies used by local radio services. A volunteer police department or fire department employee can also be a good source for this information.

As a genaral rule on VHF, most activity concentrates between 153.785 and 155.98 MHz and then again from 153.73 to 159.46 MHz. Here you find local government, police, fire, and most other emergency services. If you are near a railroad or major railroad tracks, look between 160.0 to 161.9 for signals.

In some larger cities, there has been a move to the UHF bands for 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, mobile and control units associated with base and repeater units operate between the frequencies of 456.025 and 459.95 MHz and again between 465.025 and

15

469.975 MHz. The repeaters operate 5 MHz lower than the base and mobile units (that is, 451.025 to 454.95 MHz and 460.025 to 464.975 MHz). This means that if you find an active frequency inside one of these spreads, you can look 5 MHz lower (or higher, as the case may be) to find that radio service.

Frequencies in different bands are accessible only at specific intervals. However, the frequencies that you can store into your scanner's memory are in 5, 12.5, or 50 kHz steps. Your scanner automatically rounds the entered frequency down to the nearest valid frequency. For example, if you try to enter a frequency of 151.473, your scanner accepts it as 151.475.

16

TYPICAL BAND USAGE

The following is a brief listing of the services typical of the bands received by your scanner. This listing can help you decide which ranges you would like to scan.

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	10HAM
29.70 - 29.80	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

108 - 136 MHz BAND

108.000 - 118.000	Air Navigation
118.000 - 136.000	Aircraft

136 - 174 MHz BAND

136.000 - 144.000	Govt
144.000 - 148.000	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.
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.
171.388 - 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

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.
467.750 - 467.925 ... . Bus.
467.7375 - 469.975 .... Pub. Safety. Ind.,
Land Tr.

TV Bands for Special Communications
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
6 MHz Segment is allocated for Channel 14
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.

These frequencies are subject to change and might
vary some from area to area. For a more complete list-
ing. refer to the *Police Call Radio Guide Including Fire
and Emergency Services* available at your local
Radio Shack store

You might discover one of your regular stations on a
frequency that is not listed. This could be what is
known as an "image." For example, if you suddenly
find 453.2750 you also hear on 474.9750, do a little
math to see if it is an image. Take the intermediate fre-
quency of 10.7 MHz and double it. Then, subtract it
from the "new" frequency. If the answer is the regular
frequency, you have tuned to an image. Occasionally
you might get interference on a weak or distant chan-
nel from a strong broadcast 21.7 MHz (10.85 MHz x 2)
below the tuned frequency. This is rare, and image
signal is usually cleared whenever a broadcast on the
actual frequency is in progress.

TROUBLESHOOTING

IF YOU HAVE PROBLEMS...

Here are some suggestions which might help.

PROBLEM	POSSIBLE CAUSE	REMEDY
Scanner is totally inoperative.	No power.	Check to see that you plugged the scanner into a working AC outlet.
Scanner is on but will not scan.	The SQUELCH control is not correctly adjusted.	Adjust the SQUELCH control clockwise.
In the scan mode the scanner locks on frequencies that have an unclear transmission.	"Birdies"	Avoid programming frequencies listed on Page 15, or only listen to them manually.
The keys are inoperative or the LCD display is random.	The CPU is locked up.	Using a paper clip, press the reset button on the scanner's back panel.

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

CARE AND MAINTENANCE

Your Realistic PRO-2023 desk-top programmable scanner is an example of superior design and craftsmanship. The following suggestions will help you care for the PRO-2023 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.

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

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

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 scanner.

Modifying or tampering with the scanner's internal components can cause a malfunction and might invalidate the scanner's warranty. If your scanner is not operating as it should, take it to your local 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)
Aircraft . . . . 108 - 136 MHz (in 25 kHz steps)
Government. . . . . 136 - 144 MHz (in 5 kHz steps)
Ham . . . . 144 - 148 MHz (in 5 kHz steps)
VHF-Hi . . . . 148 - 174 MHz (in 5 kHz steps)
Ham/Government . . . . 406 - 450 MHz (in 12.5 kHz steps)
UHF-Lo . . . . 450 - 470 MHz (in 12.5 kHz steps)
UHF-Hi (TV) . . . . 470 - 512 MHz (in 12.5 kHz steps)

Channels of Operation . . . . Any 20 channels in any band combinations

Sensitivity:
AM: 20 dB Signal-to-Noise ratio at 60% modulation   108 - 136 MHz . . . . $2.0\mu V$
FM: 20 dB Signal-to-Noise ratio at 3 kHz deviation   29 - 54 MHz. . . . . $0.5\mu V$
                 136 - 174 MHz . . . . $0.7\mu V$
                 406 - 512 MHz . . . . $1.0\mu V$

Spurious Rejection:
 29 - 54 MHz. . . . . 50 dB at 40 MHz
108 - 136 MHz. . . . . 50 dB at 120 MHz
136 - 174 MHz. . . . . 50 dB at 154 MHz
406 - 512 MHz. . . . . Not specified.

Selectivity:
± 11 kHz . . . . −6 dB
± 15 kHz . . . . −50 dB

IF Rejection:
10.85 MHz . . . . 60 dB at 155 MHz

Scanning Rate . . . . 10 channels/sec.

Delay Time . . . . 2 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 $1.0\mu V$
                                        Tight: (S + N)/N 25 dB

Antenna Impedance . . . . 50 ohms

Audio Power . . . . 1.7 watts maximum, 1.5 watts nominal

Built-in Speaker . . . . 3" (77mm) 8 ohm, dynamic type

Power Requirements . . . . AC, 120 Volts, 10 watts

Current Drain . . . . AC 60mA (squelched)
                                                AC 75mA (full volume unsquelched)

Dimensions . . . . 2 3/8" (60mm) x 9 7/16" (240mm) x 7 3/32" (180mm) HWD

Weight. . . . . 2.2 lbs (1 kg)

FINISH GRAIN WALNUT SIMULATED