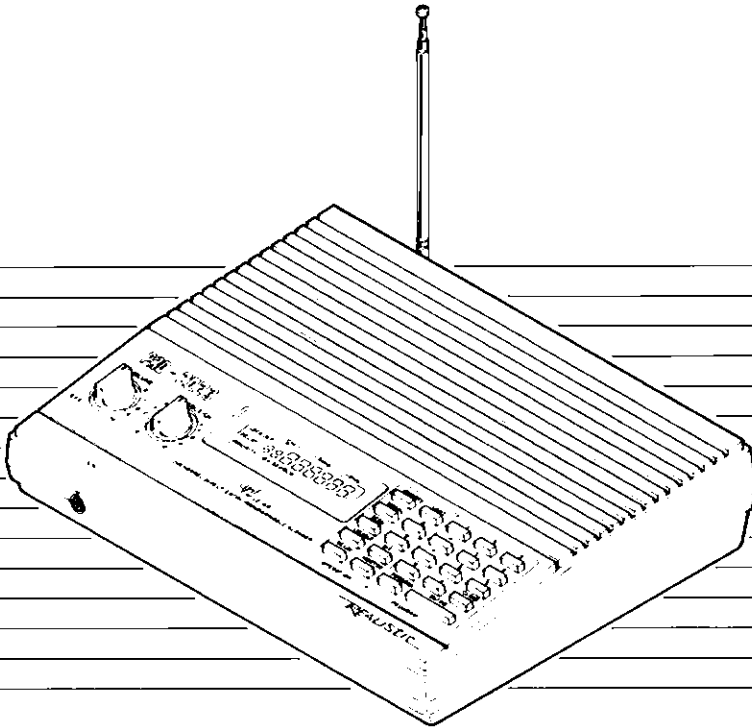


PRO-2023

20-Channel Direct Entry Programmable Scanner

OWNER'S MANUAL

Please read before using this equipment



Cat. No. 20-128

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)

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	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
<p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>		

	<p>Explanation of Graphical Symbols The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.</p>
	<p>The exclamation point within an equilateral triangle is intended to alert the user to presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.</p>

<p>WARNING: TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS RECEIVER TO RAIN OR MOISTURE.</p>

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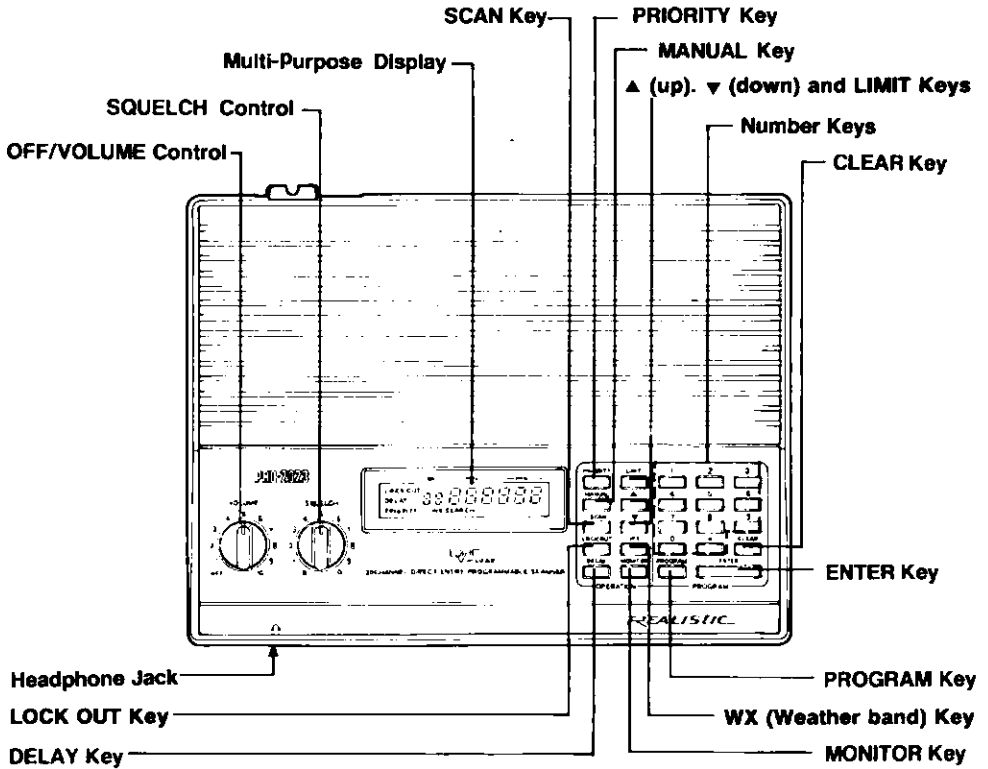
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For your protection, please record your scanner's serial number in the space provided. The serial number is located on the bottom of the unit.

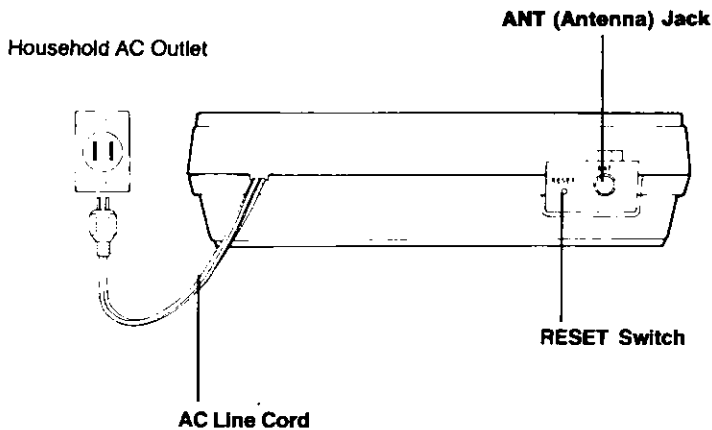
Serial Number: _____

A QUICK LOOK AT YOUR PRO-2023

FRONT PANEL

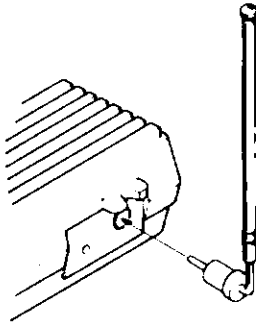


REAR PANEL



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.

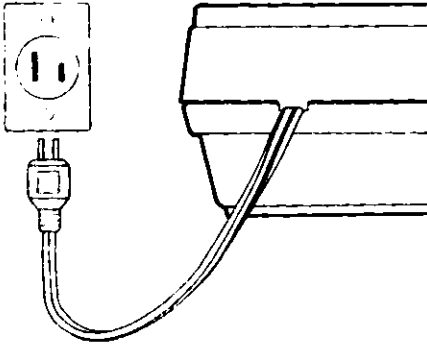
Warning: When installing or removing an outdoor antenna, use extreme caution. If the antenna starts to fall, let it go! It could contact overhead power lines. If the antenna touches the power line, contact with the antenna, mast, cable, or guy wires can cause electrocution and death! Call the power company 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.

CONNECTING TO POWER

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

Household AC Outlet

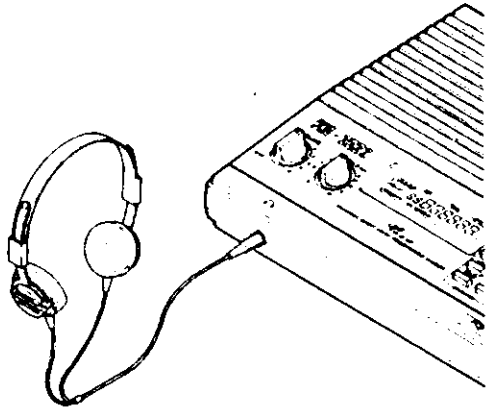


It initially takes the memory backup circuit 24 hours to become fully functional. If the scanner is without power for about 3 days it again takes 24 hours to become fully functional. During a power failure, or if you disconnect the power cord, the circuit holds memory for about three days.

CONNECTING HEADPHONES

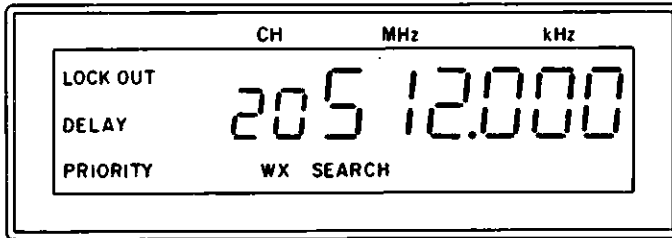
For listening privately or in a noisy environment, plug headphones (not supplied) into the headphone jack on the front of your scanner. We recommend a mono headset, available at your local Radio Shack store. You automatically disconnect the internal speaker when you plug in the headphones.

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.

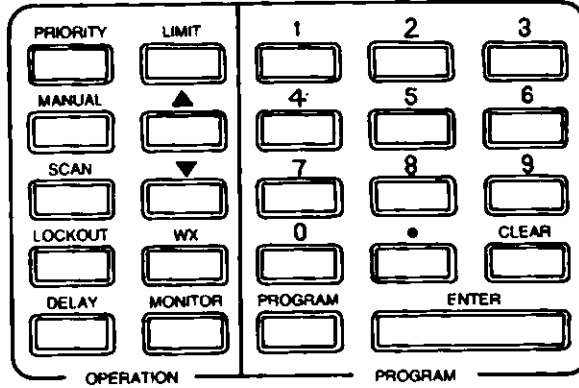
- - - appears during a search. Lo and Hi also appear in the display to prompt you to enter the lower and upper limit frequencies.

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.

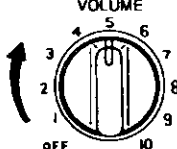
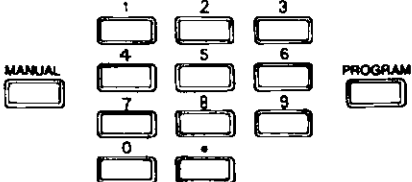
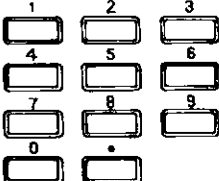
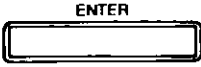


MONITOR—accesses the monitor memories. See “Moving a Frequency from Monitor Memory to a Channel.”

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.	

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.

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 Commission) 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 forecast and regional weather information, simply press [WX]. Your scanner begins scanning through the weather band, and WX SEARCH appears on the display.



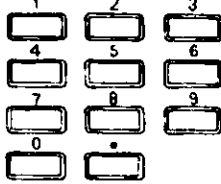

Your scanner should stop within a few seconds, and you hear the local weather broadcast. If the broadcast is weak, you can press [WX] again to scan through the rest of the weather band.

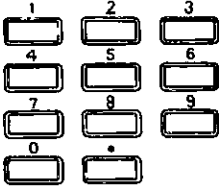



SEARCHING FOR ACTIVE FREQUENCIES

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].	
2. Press [LIMIT]. Then, press [CLEAR].	
3. Enter the lower limit of the frequency range.	
4. Press [ENTER]. Then, press [LIMIT].	

<p>5. Enter the upper limit of the frequency range.</p>	
<p>6. Press [ENTER].</p>	
<p>7. Press ▼ to search from the upper limit down to the lower limit. Or, press ▲ to search upward starting from the lower limit.</p>	
<p>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.</p>	

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

MOVING A FREQUENCY FROM MONITOR MEMORY TO A CHANNEL

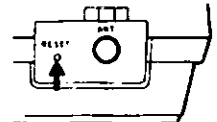
If you want to move a frequency you have stored in the monitor memory to a channel, follow this procedure.

<p>1. Press [MANUAL], the channel number, and then [MANUAL] and [PROGRAM].</p>	
<p>2. Press [MONITOR].</p>	
<p>3. Press [ENTER]. The frequency is stored in the specified channel.</p>	
<p>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.</p>	

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.



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 general 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

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.

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	35.70 - 35.72	Bus.
Amateur	Ham	35.74 - 35.98	Sp. Ind. & Bus
Automobile Emergency	Auto Emer.	36.00 - 37.00	Govt.
Broadcast Remote	BC. R.	37.02 - 37.44	P.D. & L. Govt.
Bureau of Reclamation	Bur. Recl.	37.46 - 37.86	Power
Civil Air Patrol	CAP	37.90 - 37.98	Hwy. & Sp. Emer.
Department of Agriculture		38.00 - 39.00	Govt.
and Forestry	Agr. and For.	39.02 - 39.98	P.D., L. Govt.
Fire Department	F.D.	40.00 - 42.00	Govt.
Forest Products	For. Prod.	42.02 - 42.94	St. P.D.
Forestry Conservation	Fors. Cons.	42.96 - 43.18	Sp. Ind. & Bus.
Government	Govt.	43.22 - 43.68	Mob. Tel. Page
Highway Maintenance	Hwy.	43.70 - 44.60	Trucks. Bus.
Land Transportation	Land Tr.	44.62 - 45.06	St. P.D., For. Cons
Local Government	L. Govt.	45.08 - 45.66	P.D
Manufacturers	Mfg.	45.68 - 46.04	P.D Hwy. Sp. Emer
Military	MIL	46.06 - 46.50	F.D
Mobile Telephone	Mob. Tel.	46.52 - 46.58	L Govt
Motion Picture	Mot. P.	46.60 - 47.00	Govt
Motor Carrier	Buses. Trucks	47.02 - 47.40	St. Hwy
National Parks	Nat. Park	47.42	Red Cross
Petroleum	Pet.	47.44 - 47.68	Sp. Ind. Sp. Emer
Police	P.D.	47.70 - 48.54	Power
Power Utilities	Power	48.56 - 49.58	For. Prod. Pet
Radio Paging	Page	49.60 - 50.00	Govt
Railroad	R.R.	50.00 - 54.00	6 Meter Amateur (Ham) Band
Relay Press	Press		
State Police	St. P.D.		
Special Emergency	Sp. Ind.		
Taxicab Radio	Taxi	108.000 - 118.000	Air Navigation
Telephone Maintenance	Tel. Maint.	118.000 - 136.000	Aircraft
U.S. Coastal			
and Geodetic Survey	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		
		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.

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.	460.000 - 460.625	P.D., F.D.
154.655 - 155.145	P.D., L. Govt., St. P.D.	460.650 - 462.175	Bus.
155.160 - 155.400	Sp. Emer., P.D.	462.200 - 462.450	Taxi
155.415 - 156.030	P.D., L. Govt.	462.750 - 462.975	Bus.
156.045 - 156.240	Hwy., P.D.	463.000 - 463.175	Medical
156.275 - 157.425	Marine	463.200 - 464.975	Bus.
157.456 - 157.500	Auto Emer.	465.000 - 467.500	P.D., F.D., Ind., Land Tr.
157.530 - 157.710	Taxi	467.750 - 467.925	Bus.
157.740 - 158.100	Mob. Tel., Page	467.7375 - 469.975	Pub. Safety, Ind., Land Tr.
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

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 - 475.9875	Pet., For. Prod. Mfg.

These frequencies are subject to change and might vary some from area to area. For a more complete listing, 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 frequency 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 channel 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 μ V
FM: 20 dB Signal-to-Noise ratio at 3 kHz deviation	29 - 54 MHz	0.5 μ V
	136 - 174 MHz	0.7 μ V
	406 - 512 MHz	1.0 μ 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 μ 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)

RADIO SHACK LIMITED WARRANTY

This product is warranted against defects for 1 year from date of purchase from Radio Shack company-owned stores and authorized Radio Shack franchisees and dealers. Within this period, we will repair it without charge for parts and labor. Simply **bring your Radio Shack sales slip** as proof of purchase date to any Radio Shack store. Warranty does not cover transportation costs. Nor does it cover a product subjected to misuse or accidental damage.

EXCEPT AS PROVIDED HEREIN, RADIO SHACK MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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