

Horizon HX230S

VHF/FM Marine Handheld Transceiver

Owner's Manual

Contains:

- General Information
- Operation
- Accessories
- Specifications
- Troubleshooting

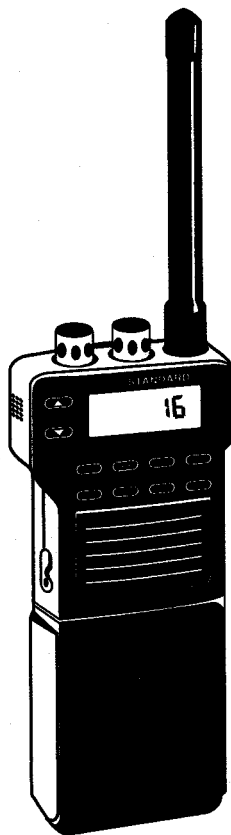


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1.1 INTRODUCTION

The Standard Communications Corp. (SCC) Model HX230S is a water-resistant marine handheld two-way VHF radio. It exceeds Mil Spec 810D for rain drip and salt fog, and operates on all currently allocated marine channels, switchable for use with either USA, International, or Canadian regulations. Emergency channel 16 can be instantly accessed by pressing the red **[EMER]** key. Weather channels can also be accessed immediately by pressing the **[WX]** key.

The radio includes the following features: scanning, priority scanning, battery saver, easy-to-read LCD display, SMA antenna connector, lithium battery for memory back-up, battery life displayed on LCD, and a transmit timeout timer (TOT).

VOX (voice-operated transmission) is possible with an optional CHP230 headset. With this feature, simply talking into the CHP230 microphone keys the transmitter without having to press the push-to-talk switch.

For privacy of communications, an optional CVS240 voice scrambler can be installed.

1.2 FCC/DOC INFORMATION

The following data pertaining to the radio are necessary to fill out your FCC or DOC license application.

FCC Type Acceptance	Part 80
Output Power	
With CNB230 Battery:	5.0 W (high) 1.0 W (low)
With CNB231 Battery:	2.2 W (high) 1.0 W (low)
Emission	16KOF3E
Frequency Range	156.025 to 163.275 MHz
FCC Type Acceptance Number	APV0191
DOC Type Approval Number	363221112P

Additional FCC and DOC data, including licensing requirements, are contained in a companion document titled OWNER'S MANUAL SUPPLEMENT. The document also contains charts for VHF channel assignments, radio procedures, maintenance, factory service information, and warranty data.

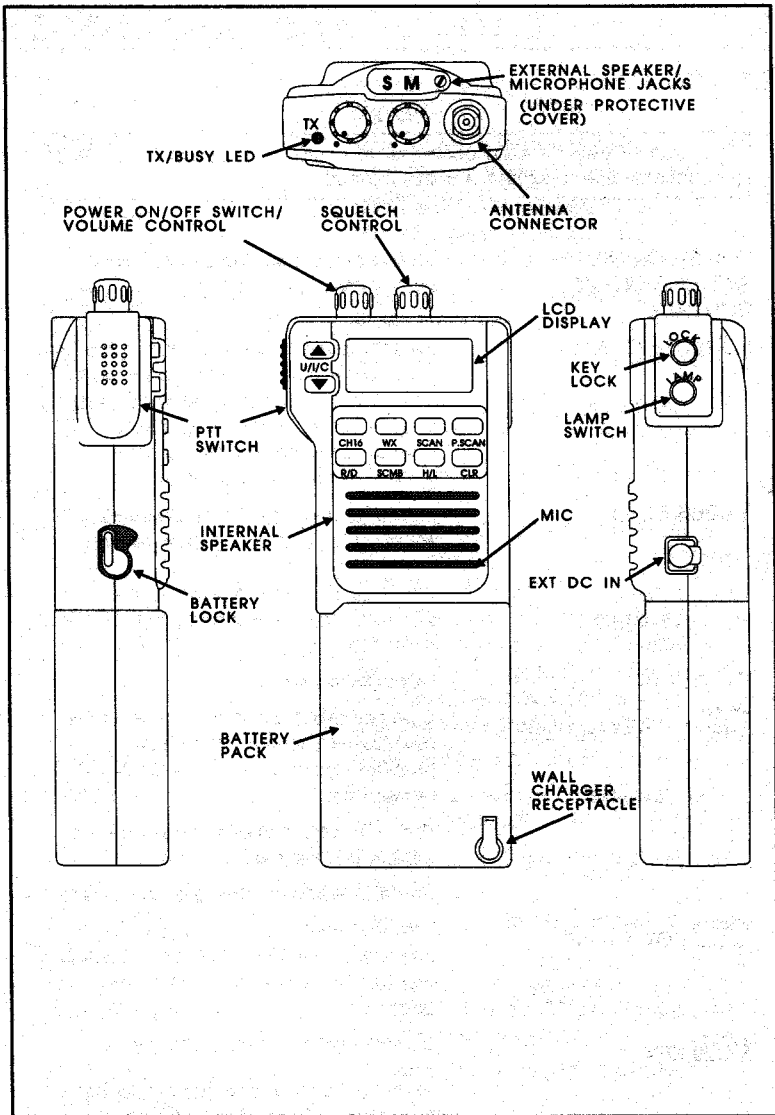


Figure 1. Controls and Connections

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2.1 CONTROLS**NOTE**

This section defines each control of the radio. For detailed operating instructions refer to section 4 of this manual.

**POWER ON-OFF
SWITCH/VOLUME
CONTROL**

Turns the radio on and off and controls the volume.

SQUELCH CONTROL

Sets the point at which random noise on the channel does not activate the audio circuits but a normal signal does. This point is called the squelch threshold. Further adjustment of the squelch control will degrade reception.

TX/BUSY LED

Lights RED to indicate the presence of RF power output during transmission.

Lights GREEN to indicate that the selected channel is busy during reception.

PTT SWITCH

Keys the transmitter.

 UP KEY

Channel select. Each press selects the next higher channel. When held pressed, selects channels at a rate of 12 per second.

With  key, changes the mode from USA to International or Canada.

 DOWN KEY

Restarts scanning after scanning pause.

Channel select. Each press selects the next lower channel. When held pressed, selects channels at a rate of 12 per second.

 KEY

Immediately switches to channel 16.

With the  key, changes the mode from USA to International or Canada.

WX KEY

Immediately goes to first weather channel from any channel.

SCAN KEY

Initiates scanning of programmed channels.

P.SCAN KEY

Priority scan. Initiates scanning of programmed channels **and channel 16**.

R/D KEY

READS the selected channel into memory. When pressed again, **DELETES** the memorized channel.

SCMB KEY

Turns the scrambler on and off (if a scrambler is installed).

H/L KEY

Toggles between high and low power.


CLR KEY

Reverts to previous channel when pressed after **SCAN** or **WX** key is pressed.

Stops the radio from scanning when pressed during scan mode.

Erases all **READ** channels from the radio's memory when held pressed while turning the radio on.

LOCK KEY

Locks the channel in the displayed modes so that it is not accidentally changed.  appears to indicate that the channel is locked. Unlocks the channel when pressed again.

LAMP KEY

Turns the lamp on and off.

EXT DC IN

Provides connection for external power such as CAW240.

WALL CHARGER
RECEPTACLE

Charges battery pack with the wall charger.

BATTERY
LOCK

Locks or releases the battery pack.

EXTERNAL SPEAKER/
MICROPHONE JACK

Accepts optional speaker/microphone or headset. When the "S" jack is used, the internal speaker is disabled.

ANTENNA
CONNECTOR

Accepts flexible antenna CAT230.

BATTERY PACK

Provides DC power to the radio.

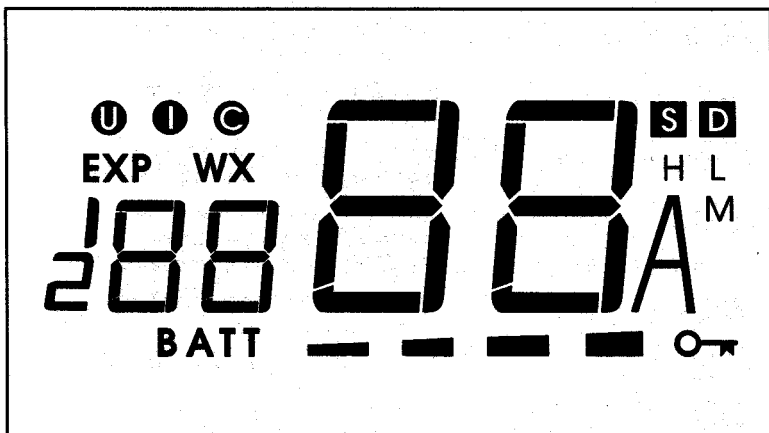


Figure 2. LCD Indicators

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2.2 INDICATORS

Channel Display	Displays the operating channel in both transmit and receive mode.
A Indicator	Indicates a simplex channel in USA or Canada mode whose counterpart in the International mode is a duplex channel.
U/I/C Indicator	Indicates the mode of operation for the particular channel. "U" indicates USA mode. "I" indicates International mode and "C" indicates Canada mode.
WX Indicator	Indicates a weather channel.
M Indicator	Indicates that the channel is in the radio's scan memory.
H, L Indicator	H= High power. L= Low power. Blank= a receive-only channel.
S, D Indicator	S= Simplex mode. D= Duplex mode.
Key Symbol	Indicates that the channel is locked.

Battery Indicator Indicates battery life, during transmission, as follows:

BATT ██████████ (fully charged)

BATT ████████ (75% charged)

BATT ██████ (50% charged)

BATT ████ (25% charged)

BATT blinks (needs to be charged)

(Also see Section 4.16)

Scrambler Code Indicator The small characters 1, 8, and 8 above the letters BATT on the display are used to indicate the scrambler code (only when a CVS240 scrambler is installed and activated).

Expansion Channel Indicator Expansion channel indicators use the same characters as the Scrambler Code indicators described above, plus the small letter 2 and the letters EXP on the display. Expansion channels may be authorized at a future date by the FCC, but use prior to such authorization can result in a fine.

3

ACCESSORIES

3.1 Provided with Radio

CAW230..... Flexible Antenna with SMA connector

CNB230..... Rechargeable Battery Pack; 10.8 V, 600 mA

CWC230..... Wall Charger for CNB230

3.2 Optional Accessories

CAW230..... Antenna Adaptor, SMA to SO-239

CAW240..... DC Power Cable for operation with 12V cigarette lighter

CHP230..... VOX Headset

CMC240..... Mobile Charger for CNB231

CMP240..... Speaker/Microphone

CMP241..... Mini Speaker/Microphone

CMP242..... Tie-pin Microphone/Earphone

CNB231..... Rechargeable Battery Pack; 7.2 V, 700 mA

CSA240..... Desktop Rapid Charger for CNB230 and CNB231

CSB240..... Gang Rapid Charger (6 batteries) for CNB230 and CNB231

CVS240..... Voice Scrambler Unit

CWC231..... Wall Charger for CNB231

CWC232..... 120/230 VAC Wall Charger for CNB230








4.1 INITIAL PROCEDURE

NOTE



Never key the radio without an antenna connected. Damage may occur to the radio. Also, do not operate the radio while it is being charged.

1. Install the belt clip on the radio if desired. Use the 2 phillips-head screws included with the clip to mount the clip to the back of the radio.
2. Install the nylon carrying strap on the belt clip if desired. The steel ring on the strap attaches to a hole on a tab protruding from the belt clip.
3. Install the battery pack on the radio (see section 4.14).
4. Install the antenna on the radio.
5. Turn the **POWER ON-OFF** switch clockwise to turn the radio on.

4.2 RECEPTION

1. Select the desired channel by pressing the  or  key.
2. If necessary, press the **LAMP** key to turn on the lamp. The lamp will automatically turn off in about 5 seconds. To turn off the lamp sooner, press the **LAMP** key again.
3. To lock the channel in the operating mode so that it is not accidentally changed, press and hold the **LOCK** key for approximately two seconds. This locks the  and  keys and all the front panel controls except the "LAMP" key, the  key, and the **LOCK** key.  will appear on the display to indicate that the channel is locked. Press the **LOCK** key again to unlock the channel.  will disappear from the display.
4. Turn the **SQUELCH CONTROL** counterclockwise until noise is heard. Next, turn the control slightly clockwise just until the noise disappears. This is the proper squelch setting, and the control should not be rotated beyond this point or receiver sensitivity will be degraded.
5. When a message is received, adjust the volume to the desired listening level. The **TX/BUSY LED** will light green to indicate that the channel is busy.

4.3 USA, CANADA, and INTERNATIONAL MODE

1. To change the mode of the radio, press and hold the  key then press the  key. The mode will change from USA, to International, to Canada with each press.

2. A "U" will appear on the LCD for the USA mode, an "I" will appear for International mode and a "C" will appear in Canada mode.
3. Refer to the marine channel charts in the **OWNER'S MANUAL SUPPLEMENT** for allocated channels in each mode.

4.4 WEATHER CHANNELS

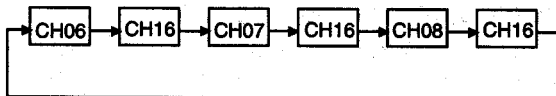
1. To select a weather channel, press the **[WX]** key from any channel. The radio will go to the first weather channel.
2. Press the **[<]** or **[>]** key to go to the other weather channels.
3. To exit from the weather channels, press the **[CLR]** key. The radio will revert to the previous non-weather channel.

4.5 SCANNING

1. Select a channel to be scanned by using the **[<]** or **[>]** key. Press the **[MR]** key to **READ** the channel into the radio's memory. An "M" will appear on the LCD.
2. Repeat step 1 for other channels to be scanned.
3. To **DELETE** a channel from the radio's scan memory, press the **[MR]** key again while the memorized channel is displayed. The "M" will disappear from the LCD.
4. All channels **READ** will remain in the radio's scan memory even if the power is turned off. See section 4.7 to clear the radio's scan memory.
5. Adjust the **SQUELCH CONTROL** just until background noise disappears.
6. To start scanning, press the **[SCAN]** key. Scanning will proceed from the lowest to the highest memorized channel and will stop on a channel receiving a signal.
7. To stop scanning, press the **[CLR]** key.

4.6 PRIORITY SCANNING

1. For priority scanning, press the **[SCAN]** key. Scanning will proceed between the memorized channels and channel 16. Channel 16 is the priority channel and will be scanned after each memorized channel.
2. For example, channels 06, 07, and 08 are in the radio's scan memory. Priority scanning will proceed in the following sequence:



3. Even when the radio stops and listens to the signal of a memorized channel, the radio will dual watch between this channel and channel 16. The radio will drop this signal when a signal is received on channel 16.

4.7 CLEARING THE RADIO'S MEMORY

To erase all channels from memory:

1. Turn the radio off.
2. Press and hold the **CLR** key while turning the radio on.

4.8 TRANSMISSION

1. Monitor the channel on which you wish to transmit, prior to initiating transmission. **THIS IS AN FCC REQUIREMENT!**
2. For communications over short distances, press the **LOW** key until "L" is displayed on the LCD. This indicates low power, approximately 1 watt.
3. If using low power is not effective, select high power by pressing the **HIGH** key until "H" is displayed on the LCD.
4. When receiving a call, wait until the call is finished before transmitting. The radio cannot transmit and receive simultaneously.
5. Press the PTT (push-to-talk) switch to key the transmitter and initiate communications. For best results, speak into the microphone at a distance of 1/2 to 1 inch. The **TX/BUSY LED** will light red during transmission.
6. Always release the PTT switch immediately after each transmission.
7. The radio has a timer that automatically inhibits transmission after the PTT switch is pressed continuously for a preset time. Ten seconds before this timeout occurs, the radio will emit a loud beeping sound and then revert to receive mode. To transmit again, the PTT switch must first be released and then pressed again. This timeout timer (TOT) prevents a continuous transmission that would result from an accidentally stuck PTT switch.

4.9 EMERGENCY CHANNEL 16

1. To select the emergency channel, press the **EM16** key from any channel.
2. Transmit your emergency signal in the same manner as on regular channels. If you cannot contact anyone on channel 16, switch to another channel.
3. To revert to previous channel from channel 16, press the **CLR** key.

4.10 SIMPLEX/DUPLEX CHANNEL USE

All channels are factory-programmed in accordance with FCC (USA), DOC (Canada) and International regulations. Mode of operation cannot be altered from simplex to duplex or vice-versa. Simplex or duplex mode will be automatically

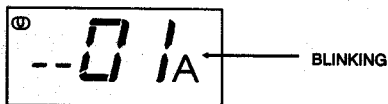
activated, depending on the channel and whether U.S.A., International, or Canadian operating mode is selected. Refer to the channel charts in the **OWNER'S MANUAL SUPPLEMENT**.




4.11 VOICE SCRAMBLER

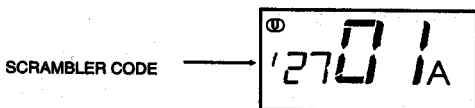
If privacy of communication is desired, a CVS240 voice scrambler can be installed in the radio. Contact your SCC Dealer or the SCC factory to have the voice scrambler installed and programmed into your radio.



With a voice scrambler installed in the radio, channels to be scrambled can be programmed as follows:

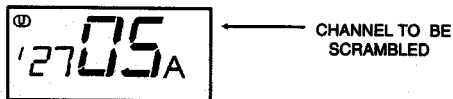
1. Press and hold the  key and turn on the radio. The display will show:




2. Press and hold the  key and press the  or  key to set the scrambler code. Any number from 00 to 127 can be chosen as the scrambler code but all channels to be scrambled must have the same code. The display will show:



3. Select the channel to be scrambled by pressing the  or  key. The display will show:



4. Press the  key to store the channel to be scrambled in the radio's memory. The channel number will stop blinking. The display will show the following with an "M" appearing.



5. If the channel was entered erroneously, delete the channel from memory by pressing the **(CLR)** key. "M" will disappear from the display. To change the scrambler code, repeat step 2.
6. To program other channels to be scrambled, repeat steps 3 and 4. Only one scrambler code can be chosen for all channels programmed. All channels programmed will show the scrambler code set in step 2.
7. If it is necessary to delete the scrambler code and all the channels programmed for scrambling, press and hold the **(ESC)** key and press the **(CLR)** key. This will clear the memory and the display will revert to the one shown in step 1.
8. After all the desired channels to be scrambled have been programmed, turn off the radio.
9. Turn on the radio. Normal operation will resume.
10. Select a channel that was programmed for scrambler mode.
11. Press the **(ESC)** key to turn the scrambler on. The display will show the scrambler code to indicate that the scrambler is activated.
12. Press the **(ESC)** key again to turn the scrambler off.

4.12 EXTERNAL POWER CONNECTION

1. Make sure that the **POWER ON-OFF SWITCH** is in the **OFF** position.
2. Plug the end of the optional CAW240 (see Section 3 for accessories) with the cigarette plug to the external power source (cigarette lighter of the vessel). Plug the other end of the CAW240 to the **EXT DC IN** connector of the radio.
3. Turn on the **POWER ON/OFF** switch. The radio is now ready for operation.

CAUTION

Make sure that the external power source is between 6 to 16 volts DC. Voltage fluctuations outside this range may cause damage to the radio.

4.13 BATTERY CHARGING

The battery pack supplied with the radio was charged at the factory. To check the charge status, install the battery and press the PTT switch while observing the BATT indicator on the display (see page 6).

The CWC230 battery charger supplied with the radio will recharge a completely discharged CNB230 battery pack in about 15 hours.

The optional CNB231 battery pack requires the optional CWC231 battery charger, which also charges the battery pack in about 15 hours.

Battery packs should not be charged with the CWC230 or CWC231 chargers for longer than 15 hours.

The CSA240 is an optional desktop rapid charger that will charge either the CNB230 or CNB231 battery in only 1 hour. The radio and its battery can be placed into this charger, and the charger set to rapid charge. Battery condition is automatically sensed: when full charge is achieved, the charger will switch to a trickle-charge mode to maintain the charge indefinitely without harm to either the battery or the charger. This charger and an extra battery are highly recommended for radios that will be in daily use.

The Specifications Section of this manual lists the approximate battery life for both types of batteries used with the radio.

4.14 BATTERY INSTALLATION

To install the battery pack, perform the following:

1. Turn the radio off.
2. Hold the radio in your left hand with the display facing you.
3. Hold the battery in your right hand with the front facing you.
4. Slide the battery onto the bottom of the radio from right to left. It will click into place.

4.15 BATTERY REMOVAL

To remove the battery pack, perform the following:

1. Turn the radio off.
2. Push the battery lock towards the front of the radio and hold.
3. Slide the battery pack to the right and remove.

4.16 LOW BATTERY INDICATIONS

In addition to the visual indications for battery condition described on page 6, the radio provides an audible alert for a low battery. If the battery is not completely "dead" but too weak for reception, continual beeps will sound from the speaker for about 15 seconds when the radio is turned on. If the radio is receiving when the battery reaches this point, the beeps will also occur. Finally, if the battery has enough charge for reception but not transmission, beeps will sound when the PTT switch is pressed.

4.17 BATTERY SAFETY

Battery packs for your radio contain nickel cadmium (NiCad) batteries. This type of battery stores a charge powerful enough to be dangerous if misused or abused, especially when removed from the radio. Please observe the following precautions:

- **DO NOT SHORT BATTERY PACK TERMINALS**

Shorting the terminals that provide power to the radio can cause sparks, severe overheating, burns, and battery cell damage. If the short is of sufficient duration, it is possible to melt battery components. Do not place a loose battery pack on or near metal surfaces or objects such as paper clips, keys, tools, etc. When the battery pack is installed on a radio, the terminals that transfer current to the radio are not exposed. The terminals that are exposed on the battery pack when it is mounted on the radio are charging terminals only and do not constitute a hazard.

- **DO NOT OVERCHARGE**

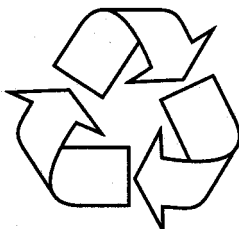
Do not charge the radio for more than 15 hours with the CWC230, CWC231 or CWC232 Wall Chargers or the CMC240 mobile charger. Heat generated by overcharging can shorten battery life and cause other battery pack component failures. The CSA240 and CSB240 rapid chargers will change to a trickle charge to maintain charge after their rapid charge cycle. Battery packs may be left in these two chargers without harm to either the battery pack or charger.

- **DO NOT INCINERATE**

Do not dispose of any NiCad battery in a fire or incinerator. The heat of a fire may cause battery cells to explode as well as release dangerous gases.

- **DISPOSE OF BATTERY PACKS PROPERLY**

NiCad batteries must be recycled or disposed of properly. For requirements in your area, check with the Dealer from whom you purchased your radio. The symbol shown below is a reminder that the battery packs are recyclable.



Ni-Cd

5.1 GENERAL

Frequency Range	156.025 to 163.275 MHz
Channels	All currently allocated USA, Canada, and International channels, plus 10 weather channels.
RF Power Output	
With CNB230 Battery	5.0 W (high)
	1.0 W (low)
With CNB231 Battery	2.2 W (high)
	1.0 W (low)
Operating Voltage	6.1 to 12.4 V
Current Drain	
Standby	40 mA
Receive	250 mA
Transmit	
With CNB230 Battery:	1.2 A (high power)
	0.6 A (low power)
With CNB231 Battery:	0.8 A (high power)
	0.6 A (low power)
Dimensions	6.44 in-H x 2.17 in -W x 1.33 in-D (163.5 mm-H x 55 mm-W x 34 mm-D)
Weight	1 lb. (0.46 kg)
FCC Type Acceptance Number	APV0191
DOC Type Approval Number	363221112P
Battery Life	
CNB230 (5% TX, 5% RX, 90% Standby)	9 hrs. 10 min. Low
	6 hrs. 30 min. High
CNB231 (5% TX, 5% RX, 90% Standby)	10 hrs. 50 min. Low
	9 hrs. 40 min. High
Battery Charge Time (with supplied CWC230 Charger)	15 Hrs. (approx)
With optional CWC231 or CMC240 Charger	14 Hrs. (approx)
With optional CSA240 Charger	1 Hr. (approx)

5.2 TRANSMITTER

Conducted Spurious Emissions	60 dB (high)
	55 dB (low)
Audio Frequency Response	within + 2/-8 dB
	of a 6 dB/octave pre-emphasis characteristic from 300 Hz to 3000 Hz
AF Harmonic Distortion	3%
Hum and Noise Level	37 dB
Frequency Stability (-20° to +50° C)	± 0.0007%

5.3 RECEIVER

Sensitivity	
20 dB Quieting	0.35 μ V
12 dB SINAD	0.3 μ V
Threshold Squelch Sensitivity	0.15 μ V
Modulation Acceptance Bandwidth	± 4.5 kHz
Spurious Image Rejection	60 dB
Intermodulation Rejection	60 dB
Channel Spacing	25 kHz

SYMPTOM	CAUSE	SOLUTION
The SCAN key does not make the radio scan.	No channels READ into the radio's memory. Squelch is not adjusted.	Use the R/D key to memorize desired channels into the radio's memory. Adjust the squelch to threshold or to the point where noise just disappears. Further adjust of the squelch control will attenuate incoming signals.
The U/C key does not function.	Proper operation not followed.	Press and hold the CH16 key then press the UP key (U/C).
Rotating the squelch control does not turn off background noise.	Low battery.	Charge battery. Refer to section 5 of this manual.
Other vessel can contact you but you cannot communicate back, when "D" is displayed on the LCD.	Operating on a duplex channel. Duplex channels are used to contact marine operators. The transmit and receive frequencies are different and will not allow ship-to-ship communications.	Use a simplex channel when communicating ship-to-ship.
Cannot change channels	LOCK key is on.	Turn LOCK key off.
LOCK key does not function.	Proper operation not followed.	Press and hold for two seconds.
Memorized channels are not retained in memory when the radio is turned off.	Defective lithium battery.	Contact your SCC Dealer or SCC for servicing.
LED on CWC230 does not light when charging a battery.	Defective battery or charger.	Contact your SCC Dealer or SCC for servicing.