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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 [ ] key. Weather channels can also be accessed immediately by pressing the [ ] 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.
2 CONTROLS AND INDICATORS

2.1 CONTROLS

<table>
<thead>
<tr>
<th>CONTROL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER ON-OFF</td>
<td>Turns the radio on and off and controls the volume.</td>
</tr>
<tr>
<td>SWITCH/VOLUME</td>
<td>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.</td>
</tr>
<tr>
<td>SQUELCH CONTROL</td>
<td></td>
</tr>
<tr>
<td>TX/BUSY LED</td>
<td>Lights RED to indicate the presence of RF power output during transmission.</td>
</tr>
<tr>
<td></td>
<td>Lights GREEN to indicate that the selected channel is busy during reception.</td>
</tr>
<tr>
<td>PTT SWITCH</td>
<td>Keys the transmitter.</td>
</tr>
<tr>
<td>UP KEY</td>
<td>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. Reverts scanning after scanning pause.</td>
</tr>
<tr>
<td>DOWN KEY</td>
<td>Channel select. Each press selects the next lower channel. When held pressed, selects channels at a rate of 12 per second.</td>
</tr>
<tr>
<td>CH10 KEY</td>
<td>Immediately switches to channel 16.</td>
</tr>
<tr>
<td></td>
<td>With the CH10 key, changes the mode from USA to International or Canada.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>KEY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>WX</td>
<td>Initiates scan to the WX (Weather) channel.</td>
</tr>
<tr>
<td>SCAN</td>
<td>Initiates scan to the SCAN channels.</td>
</tr>
<tr>
<td>PRESS</td>
<td>Priority scan. Priority scan programmed.</td>
</tr>
<tr>
<td>#/O</td>
<td>READS the #/O memory.</td>
</tr>
<tr>
<td>DELETE</td>
<td>TURNS the scramble function off.</td>
</tr>
<tr>
<td>FL</td>
<td>Toggles between lock and unlock modes so channel select can change.</td>
</tr>
<tr>
<td>U/L</td>
<td>Erases all lock and unlock modes so that channel select cannot change.</td>
</tr>
<tr>
<td>CLR</td>
<td>Locks the current channel.</td>
</tr>
<tr>
<td>LOCK</td>
<td>Extinguishes the radio's memory.</td>
</tr>
<tr>
<td>LAMP</td>
<td>Provides power to equipment such as Car Amplifier.</td>
</tr>
<tr>
<td>EXT DC IN</td>
<td>Charges batteries without charger.</td>
</tr>
<tr>
<td>WALL CHARGER</td>
<td>Locks or releases volume.</td>
</tr>
<tr>
<td>RECEPTACLE</td>
<td>Accepts optional equipment such as Headset.</td>
</tr>
<tr>
<td>BATTERY LOCK</td>
<td>Provides power to Car Mic Adapter.</td>
</tr>
<tr>
<td>EXTERNAL SPEAKER/MICROPHONE JACK</td>
<td>Provides power to external speakers and microphones.</td>
</tr>
</tbody>
</table>
**INDICATORS**

- **WX KEY**
  Immediate goes to first weather channel from any channel.
  Initiates scanning of programmed channels.

- **SCAN KEY**
  Priority scan, initiates scanning of programmed channels **and channel 16**.
  READS the selected channel into memory. When pressed again, 
  **DELETES** the memorized channel.

- ** favoured KEY**
  Turns the scrambler on and off (if a scrambler is installed).

- **TUN** KEY
  Toggles between high and low power.

- **CTT KEY**
  Reverts to previous channel when pressed after **SP** or **S** key is pressed.
  Stops the radio from scanning when pressed during scan mode.

- **LOCK KEY**
  Erases all READ channels from the radio’s memory when held pressed while 
  turning the radio on.

- **LAMP 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.

- **EXT DC IN**
  Turns the lamp on and off.

- **WALL CHARGER**
  Provides connection for external power such as CAW240.

- **RECEPTACLE**
  Charges battery pack with the wall charger.

- **BATTERY**
  Locks or releases the battery pack.

- **LOCK**
  Accepts optional speaker/microphone or headset. When the “S” lock is used, the 
  internal speaker is disabled.

- **EXTERNAL SPEAKER/ MICROPHONE JACK**
  Accepts flexible antenna CAT230.

- **ANTENNA CONNECTOR**
  Provides DC power to the radio.

- **BATTERY PACK**

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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/C Indicator: Indicates the mode of operation for the particular channel. "U" indicates USA mode, "C" indicates International mode and "A" 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.

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
- CAT230: Flexible Antenna with SMA connector
- CBN230: Rechargeable Battery Pack; 10.8 V, 600 mAh
- CWC230: Wall Charger for CBN230

3.2 Optional Accessories
- CAW230: Antenna Adaptor, SMA to SO-239
- CAW240: DC Power Cable for operation with 12V cigarette lighter
- CHP230: Mobile Charger for CBN231
- CMP240: Speaker/Microphone
- CMP241: Mini Speaker/Microphone
- CMP245: Tie-pin Microphone/Earphone
- CBN231: Rechargeable Battery Pack; 7.2 V, 700 mAh
- CSA240: Desktop Rapid Charger for CBN230 and CBN231
- CS240: Gang Rapid Charger (9 batteries) for CBN230 and CBN231
- CVS240: Voice Scrambler Unit
- CWC231: Wall Charger for CBN231
- CWC232: 120V/230 VAC Wall Charger for CBN230
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 USA.
3. Refer to the marine channel for allocation changes.

4.4 WEATHER CHANNELS

1. To select a weather channel press the ✈️ key. The radio will go to the first weather channel.
2. Press the ✈️ or 🔎 key to select another weather channel.
3. To exit from the weather channel press the ✈️ key.

4.5 SCANNING

1. Select a channel to be scanned by pressing the ✈️ key to READ the channel displayed on the LCD.
2. Repeat step 1 for other channels.
3. To DELETE a channel from the memory press the ✈️ key while the memorized channel is displayed on the LCD.
4. All channels READ will be displayed on the LCD.
5. Adjust the SQUELCH CONTROL to the highest memory level.
6. To start scanning, press the ✈️ key. The radio will scan to the highest memory level.
7. To stop scanning, press the ✈️ key.

4.6 PRIORITY SCAN

1. For priority scanning, press the ✈️ key. The priority channels are priority channels and will be scanned after each channel.
2. For example, channels 106 and 165 will be scanned after each channel.
OPERATION

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 SCAN key from any channel. The radio will go to the first weather channel.

2. Press the SCAN or STOP key to go to the other weather channels.

3. To exit from the weather channels, press the SCAN key. The radio will revert to the previous non-weather channel.

4.5 SCANNING

1. Select a channel to be scanned by using the SCAN or STOP key. Press the SCAN 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 SCAN 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 SCAN 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:

   CH06 → CH16 → CH07 → CH16 → CH08 → CH16

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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 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 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 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 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 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 the operating mode is selected. Refer to the MANUAL SUPPLEMENT.

4.11 VOICE SCRAMBLER
If privacy of communication is desired, a CV scrambler can be installed in the radio. Contact your SCC Dealer or service agent to have a scrambler installed and programmed into your radio.

With a voice scrambler installed in the radio, select a CV code and program as follows:
1. Press and hold the key and turn 2.
2. Press and hold the key and press the code. Any number from 00 to 127 can be chosen. All channels to be scrambled must have the same scrambler code.
3. Select the channel to be scrambled by pressing the key. The display will show:
4. Press the key to store the channel memory. The channel number will still be displayed, followed by an "M" appearing.
4 MEMORY

Before turning the radio on.

To transmit, prior to initiating transmission, press the key until "L" is displayed. The display will show low power, approximately 1 watt.

Select high power by pressing the key once and then release.

When the call is finished before transmitting. The display will show simultaneously.

To key the transmitter and initiate communication into the microphone at a distance of 1/2 mile or more, press the key during transmission.

Immediately after each transmission, the channel being used automatically inhibits transmission after the PTT switch is released. Ten seconds before this occurs, a loud beeping sound will be heard. The PTT switch must first be released and then pressed again. When the PTT switch is released, the channel being used will revert to a continuous tone.

To switch to channel 16, press the key. The display will show the channel number.

To switch to any other channel, press the key.

The channel must be stored in the radio's memory before it can be transmitted. The channel number will stop blinking when the "M" appears on the display.

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:

   BLINKING

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:

   SCRAMBLER CODE

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

   CHANNEL TO BE SCRAMBLED

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:

   M

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5. If the channel was entered erroneously, delete the channel from memory by pressing the [DEL] 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 [SST] key and press the [CD] 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 [SST] key to turn the scrambler on. The display will show the scrambler code to indicate that the scrambler is activated.

12. Press the [SST] 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 vehicle). 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 radio on any longer than 15 hours.

The CSA240 is an optional desktop rapid charger for CNB230 or CNB231 battery in only 1 hour. The battery is inserted into this charger, and the charger set to rapid charge by physically sensing: when full charge is achieved, the charger returns to charge mode to maintain the charge indefinitely, or the charger. This charger and an extra battery are designed for radios that will be in daily use.

The Specifications Section of this manual lists the 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 on top.

3. Hold the battery in your right hand with the connector facing the radio.

4. Slide the battery onto the bottom of the radio in 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.

3. Slide the battery pack to the right and remove.

4.16 LOW BATTERY INDICATION

In addition to the visual indications for battery level, the radio provides an audible alert for a low battery. The indicator lights up a red “dead” battery but too weak for reception, continues to blink for about 15 seconds when the radio is turned on, and when the battery reaches this point, the beeps will alert you that you do not have enough charge for reception but not transmission. Press the PTT switch to hear reception.

4.17 BATTERY SAFETY

Battery packs for your radio contain nickel cadmium cells of battery stores a charge powerful enough to be released, especially when removed from the radio. Please handle battery packs with care. Do not let them come into contact with water or other conductive materials. Do not use any materials that could cause a short circuit, such as metal objects. Do not attempt to disassemble the battery pack.
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 charge 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.

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5.1 GENERAL

Frequency Range

Channels

RF Power Output
With CWN230 Battery

With CWN231 Battery

Operating Voltage
Current Drain
Standby
Receive
Transmit
With CWN230 Battery:

With CWN231 Battery:

Dimensions

Weight

FCC Type Acceptance Number

DOC Type Approval Number

Battery Life
CNB230 (5% TX, 5% RX, 90% Standby)

CNB231 (5% TX, 5% RX, 90% Standby)

Battery Charge Time (with supplied CWC231 or CMC240 Charger)

5.2 TRANSMITTER

Conducted Spurious Emissions

Audio Frequency Response

AF Harmonic Distortion

Hum and Noise Level

Frequency Stability (+20° to +50° C)

5.3 RECEIVER

Sensitivity

20 dB Quieting

12 dB SINAD

Threshold Squelch Sensitivity

Modulation Acceptance Bandwidth

Spurious Image Rejection

Intermodulation Rejection

Channel Spacing

HX230S Owner’s Manual HX230S
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SPECIFICATIONS

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 CWN230 Battery ........................................... 5.0 W (high)
................................................................. 1.0 W (low)
With CWN231 Battery ........................................... 2.2 W (high)
................................................................. 0.4 W (low)

Operating Voltage .................................................. 6.1 to 12.4 V

Current Drain
Standby ............................................................ 40 mA
Receive ........................................................... 250 mA
Transmit ........................................................... 250 mA

With CWN230 Battery: ........................................... 1.2 A (high power)
................................................................. 0.6 A (low power)

With CWN231 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 ...................................... 362221112P

Battery Life
CWN230 (5% TX, 5% RX, 90% Standby) ......................... 9 hrs. 10 min. Low
........................................................................ 6 hrs. 30 min. High
CWN231 (5% TX, 5% RX, 90% Standby) ......................... 10 hrs. 50 min. Low
........................................................................ 9 hrs. 40 min. High

Battery Charge Time (with supplied CWN230 Charger) ........ 15 Hrs. (approx)
With optional CWN231 or CWN240 Charger .................. 14 Hrs. (approx)
With optional CWN240 Charger .................................. 1 Hr. (approx)

5.2 TRANSMITTER

Conducted Spurious Emissions .................................. 60 dB (high)
Audio Frequency Response ....................................... 55 dB (low)
within ±2 dB of a 0 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 μV
12 dB S/N .......................... 0.3 μV
Threshold Squelch Sensitivity .................................. 0.15 μV
Modulation Acceptance Bandwidth ......................... ± 4.5 kHz
Spurious Image Rejection ........................................ 80 dB
Intermodulation Rejection ....................................... 60 dB
Channel Spacing .................................................. 25 kHz
<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>The SCAN key does not make the radio scan.</td>
<td>No channels READ into the radio's memory.</td>
<td>Use the RD key to memorize desired channels into the radio's memory.</td>
</tr>
<tr>
<td>Squelch is not adjusted.</td>
<td></td>
<td>Adjust the squelch to threshold or to the point where noise just disappears. Further adjust of the squelch control will attenuate incoming signals.</td>
</tr>
<tr>
<td>The UP/C key does not function.</td>
<td>Proper operation not followed.</td>
<td>Press and hold the CH18 key then press the UP key (U/V/O).</td>
</tr>
<tr>
<td>Rotating the squelch control does not turn off background noise.</td>
<td>Low battery.</td>
<td>Charge battery. Refer to section 5 of this manual.</td>
</tr>
<tr>
<td>Other vessel can contact you but you cannot communicate back, when &quot;D&quot; is displayed on the LCD.</td>
<td>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.</td>
<td>Use a simplex channel when communicating ship-to-ship.</td>
</tr>
<tr>
<td>Cannot change channels</td>
<td>LOCK key is on.</td>
<td>Turn LOCK key off.</td>
</tr>
<tr>
<td>LOCK key does not function.</td>
<td>Proper operation not followed.</td>
<td>Press and hold for two seconds.</td>
</tr>
<tr>
<td>Memorized channels are not retained in memory when the radio is turned off.</td>
<td>Defective lithium battery.</td>
<td>Contact your SCC Dealer or SCC for servicing.</td>
</tr>
<tr>
<td>LED on CWC230 does not light when charging a battery.</td>
<td>Defective battery or charger.</td>
<td>Contact your SCC Dealer or SCC for servicing.</td>
</tr>
</tbody>
</table>