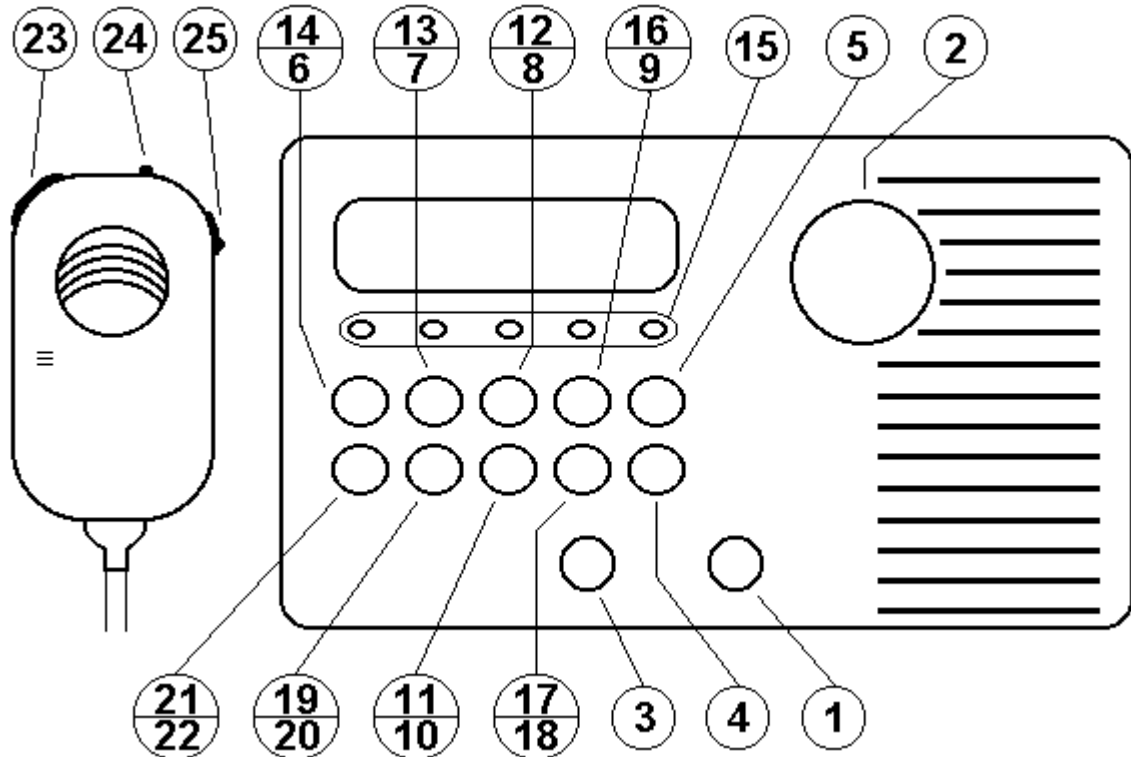


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## RAY220 VHF/FM Radiotelephone Bridge Card



### FRONT PANEL CONTROLS

- |                                |                                     |   |
|--------------------------------|-------------------------------------|---|
| 1. On/Off & Volume control     | 9. [MEM] Memory                     | 18. [DSC] Digital Selective Calling     |
| 2. Channel Selector control    | 10. [INTL] International            | 19. [HAIL] Hailer                       |
| 3. Squelch control             | 11. [WX] Weather                    | 20. [FOG] Fog                           |
| 4. [16/9] key                  | 12. [DW] Dual Watch                 | 21. [IC] Intercom                       |
| 5. [FUNC] Function             | 13. [SC] Scan Continue              | 22. [SCRM] Scramble                     |
| 6. [SCAN] All Scan             | 14. [SS] Select Scan                | 23. Microphone PTT switch               |
| 7. [1/25] High/Low Power       | 15. [M1 -M5] "quick" memory keys    | 24. Microphone 16/9 key                 |
| 8. [DWX] Dual Watch w/ Weather | 16. [RCL] Memory Recall             | 25. Microphone Up/Down Channel switches |
|                                | 17. [D/L] Distant/Local Sensitivity |   |

### RAY220 OPERATING PROCEDURES

1. To turn the power on, rotate the On/Off/Volume knob clockwise. An audible "click" should be heard and either "16" or "9" will display on the LCD, depending on which has been selected as the priority channel. Rotate the knob clockwise to its mid-point position.
2. Turn the Squelch knob fully counterclockwise.
3. Set the On/Off/Volume knob to the desired listening level.
4. Rotate the Squelch knob slowly clockwise until the speaker noise "quiets".
5. Press the [FUNC] then [1/25] key to set the power output to 1 watt or 25 watts as deemed appropriate. A 1 watt setting is generally recommended while in US harbors.
6. Rotate the channel selector control or press the channel up/down switch on the microphone to select the desired operating channel. Your manual contains a listing of the available VHF Marine channels on pages 36 and 37. Refer to the Marine Channel Usage Guide in Section 7 of your manual for appropriate channel usage. Use the quick 16/9 key to instantly select channel 16 or 9.
7. To transmit, press the microphone PTT (Push-to-Talk) switch.
8. Press [WX] to switch to the weather channel, and rotate the channel selector control or press the channel up/down switch on the microphone, to select the desired weather channel (0-9). Press [WX] again to return to the previous operating channel.
9. To enable the microphone speaker, press and hold [FUNC] and [M5] for 10 seconds. Repeat this procedure to disable the microphone speaker.

**To enter DSC transmit mode:**

1. Select CH70.
2. Press [FUNC] and [DSC] simultaneously. "CA" (all ships call) will appear on the LCD Display.

**To send an All Ship's Call:**

1. With "CA" displayed on the LCD, press the [DSC] key. "A-" and "DSC ON" will be shown.
2. Momentarily press and release the PTT switch to transmit the call. No acknowledge is required for this mode. Your radio and any DSC capable station receiving the call will automatically switch to CH16.

**To send an Individual Ship's Call:**

1. With "CA" displayed on the LCD, rotate the channel selector knob until "CI" is displayed.
2. Press the [DSC] key. "I-" and "DSC" will be displayed. If another ship's ID has been pre-programmed, the symbol will begin flashing on the display. Press [M1] to use the pre-programmed ID, or (see item "3." below).
3. To enter the Other Ship's ID:
  - Press [DSC], the displayed "I -" message will begin flashing. Select the first digit of the other ship's ID using the channel selector knob, and press [DSC]. The "2 -" message will then begin flashing.
  - Continue entering the other ship's ID in this manner until all 9 digits are entered. After the 9th digit has been entered, the ID number will be reviewed for your confirmation. Press [DSC] to accept.
4. When the ID has been successfully entered (using the [M1] key or manually), "- -" will appear on the LCD. Use the channel selector knob to select the channel you wish to communicate on and press [DSC]. If no channel is selected within 5 seconds, the unit will automatically default to CH16 (an alternate can still be selected).
5. Momentarily press and release the PTT switch to transmit the call. When the targeted ship's station receives your transmission and acknowledges, "ACK" will display on the LCD and the unit will switch to the preset channel.

**To send a Distress Call:**

1. With "CA" displayed on the LCD, rotate the channel selector knob until "Cd" is displayed, then press [DSC].
2. With "d - " and "DSC ON" displayed, press and release the PTT switch to transmit. If an appropriately equipped station receives your transmission and acknowledges, "ACK" will display on the LCD and the unit will switch to CH16.

**To receive DSC transmissions (CH70 must be selected):**

- When an **Individual Ship's Call** is received, the alarm will sound and the, "I -" message will flash. Press [FUNC] then [DSC] to cancel the alarm message, then press the PTT switch to acknowledge. The RAY220 will then switch to the channel specified in the transmitted message.
- When an **All Ship's Call** is received, the alarm will sound and the, "A -" message will flash. Press [FUNC] then [DSC] to cancel the alarm, and the RAY220 will automatically switch to CH16 to monitor the all ships call message.
- When a **Distress Call** is received, the alarm will sound and the, "d -" message will flash. Press [FUNC] then [DSC] to cancel the alarm, and the RAY220 will switch to CH16 to monitor emergency assistance to the vessel in distress.

**SCRAMBLE MODE**

**To operate the Scramble Mode:**

1. Select the working channel on which scrambled communications are desired.
2. Press [FUNC], then [SCRM]. The scramble mode is now enabled and ready for use on the selected channel. The intended receiving RAY220 (s) must have the same channel and scramble codes selected in order for your transmission to be understood by them and vice-versa. (Note: CH16 cannot be scrambled.)
3. To change scramble codes settings, press [FUNC], then press and hold [SCRM] for 3 seconds. Select the desired scramble code (01 or 02) with the channel selector and again press [FUNC] then [SCRM]. The unit will revert back to the previously selected working channel with scramble mode enabled and using the new code setting.
4. This channel will remain scrambled until the mode is canceled or a Master Reset is performed. To cancel the scramble mode for a particular channel, select the scrambled channel and press [FUNC] then [SCRM].

**LOUDHAILER OPERATIONS**

**To operate the Loudhailer:**

1. Press the [HAIL] key. "HAIL" will display on the LCD.
2. Press the PTT switch and speak in a normal voice into the microphone. Release the PTT switch to listen.
3. Press [HAIL] again to cancel the Loudhailer mode.

**FOGHORN OPERATIONS**

**To operate the Foghorn:**

1. To initiate **Manual** foghorn mode, press [FUNC] then [FOG]. "FOG" will display on the LCD. Pressing the PTT switch will produce a continuous blast. Release the PTT switch to listen.
2. To initiate **Automatic** foghorn mode, press [FUNC] then press and [FOG] for 3 seconds. "AUTOFOG" will display on the LCD and the unit will give a 5 second blast approximately every 115 seconds until canceled.
3. To discontinue either foghorn operation, press [FUNC] then [FOG].

**INTERCOM OPERATIONS**

**To operate the Intercom:**

1. To communicate with intercom station 1, press [I/C] once and "COM1" will be displayed.
2. To communicate with intercom station 2, press [I/C] twice and "COM2" will be displayed.
3. To communicate with both stations simultaneously, press [I/C] three times and "COM1" and "COM2" will be displayed.
4. When the desired intercom station(s) is (are) selected, press the PTT switch and speak in a normal voice. To listen, release the PTT switch. The intercom station acts as both speaker and microphone.