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ALWAYS AT THE FOREFRONT OF TECHNOLOGY

M A N U A L

Simrad RS87

VHF Radio System

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1 GENERAL

1.1 Introduction



Fig 1.1 - RS87 Handset

The RS87 is a modular VHF radio and Class D Digital Selective Calling (DSC) radio telephone system using a fully featured telephone-style handset to access and control all functions. It supports the latest GMDSS requirements for non-SOLAS vessels from the International Maritime Organisation (IMO). It will enable you to make digitally selected calls, which are quicker and simpler to make than traditional voice calls using Channel 16. Should a distress situation occur, with the RS87 you can quickly raise an alert, indicating your identity, your position and automatically establish distress communication on the emergency voice channel.

The RS87 transceiver is robustly constructed using a pressure die cast aluminium case for effective heat dissipation, ensuring maximum transmission performance even after many hours constant use.

Thank you for choosing Simrad

If you are pleased with your VHF we hope you will be interested in our range of marine electronic equipment, which is manufactured to the same high standards as the RS87. Please contact your nearest Simrad Agent for a catalogue showing our increasing range of high tech navigational instruments, GPS, autopilots, Radar, Echosounders, Chartplotters and VHF radio sets.

Simrad operate a policy of continual development and reserve the right to alter and improve the specification of their products without notice.

1.2 The Simrad integrated system

The standard RS87 radiotelephone can support up to two stations with full intercom facility, geographical position input via NMEA0183 and iDSC integration with Simrad chartplotters which enables the plotters to display DSC call information.

With the addition of the expansion board, the system can support an additional two stations, two intercom speakers and forward and aft foghorn/loudhailer speakers in addition to the standard functions.

Additional stations can either be another RS87 type telephone handset, or an RS86 fixed panel display, with a passive telephone handset or fistmike allowing great flexibility in installations (Fig 1.2) -

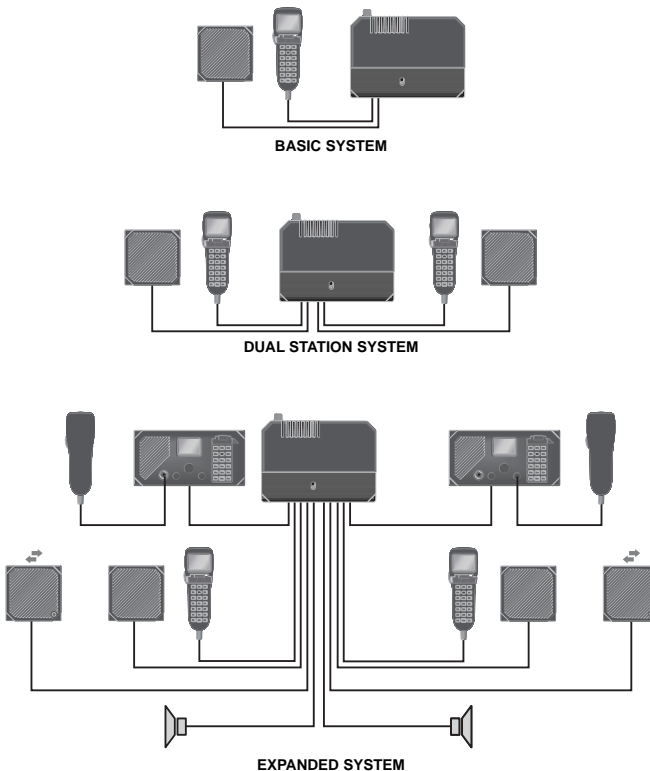


Fig 1.2 - RS87 system options

1.3 Licensing

NOTE

Prior to use check the national licensing requirements for the operator.

In the UK license applications and queries should be made to the following authority -

Ship Radio Licensing
Radio Licensing Centre
The Post Office
PO Box 1495
Bristol
BS99 3QS

A set may only be operated by, or under the supervision of a holder of a Certificate of Competence and Authority to Operate. This involves a simple examination and an annual license renewal fee. The VHF only certificate is administered by the Royal Yachting Association -

Royal Yachting Association
RYA House
Romsey Road
Eastleigh
Hants, SO5 4YA

Holders of the Restricted Certificate of Competence in Radio-telephony (which covers MF/HF SSB etc), do not need a separate VHF certificate.

In all other countries, please contact your regional authority for information.

1.4 Entering MMSI numbers

At the time of issue of your vessel's radio license, an MMSI (Maritime Mobile Service Identifier) must be requested. This is a nine digit number which must be permanently entered into the RS87 when the radio is first set up, otherwise the DSC functions cannot be accessed.

NOTE

If the boat or the RS87 are subsequently sold, the radio must be returned to an authorised Simrad agent for the MMSI number to be erased and the new owner's MMSI number entered.

For European leisure vessels fitted with VHF DSC equipment, a CEPT Short Range Certificate is required by the operator. Additional requirements, such as GOC or ROC may apply to operators on commercial vessels. Please enquire with your local licensing authority for full details.

Refer to section 3.2.1 to enter the vessel's MMSI number.

1.5 Group ID MMSI

For boats that are part of a flotilla, racing fleet or other group, a Group ID MMSI number can also be entered which will allow DSC communication within the group. Refer to section 3.2.3 to enter a Group MMSI number.

2. MAIN FUNCTIONS

2.1 General notes

Although it has many advanced features, the RS87 has been designed to be as simple and intuitive to operate as possible.



The **Shift** key is used to access the secondary functions printed above each key - press and release **Shift**, then press the appropriate key. These secondary functions are shown in this manual in *italics* (eg **Group**).

NOTE

The **Shift** key will automatically time out of Shift Mode after two seconds if another key is not pressed.



At any time, pressing **ON/C** will cancel the current operation.

The lowest occupied port is the master controller - therefore any operations initiated on this handset will override all other stations.

CAUTION

In order for other users to be able to operate the radio, it is imperative that the handset is replaced in the cradle after use.

2.2 Switching on & Second Country mode



To turn the radio on, press the **ON/C** key. The display will show the handset software issue number two seconds, then the station number and software issue number for the transceiver unit for two seconds.

As a default, the radio switches on tuned to the priority channel (normally 16). If Last Channel Used mode has been set (see section 3.3.3) the radio will switch on tuned to the previously used channel.

The radio stores the previous volume and squelch settings and will use these on startup.

In countries where it is permitted, the RS87 can operate on a secondary set of channels, such as the USA channels.



To select the secondary channel table, press **Shift** followed by **OK**. The display will show the channel set selected for two seconds before reverting to the default display.

NOTE

Channels available will depend on programming. Please enquire with your national licensing authority for details of permitted channel sets in your own country.

2.3 Changing channels

To select a channel, enter the channel number using the numeric keypad (Fig 2.1) -

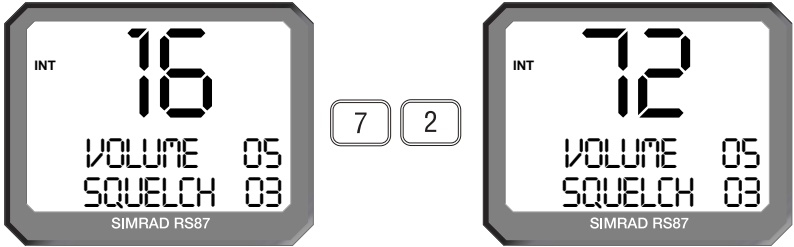


Fig 2.1 - Selecting a channel

If the channel is invalid, the display will show “Invalid Channel” and then revert to the previous channel.



The priority channel (normally 16) can be selected by pressing **16**, which will also set the radio to 25W transmit power.



The preselected User Channel can be directly selected by pressing the **User** key. The display will show “U” next to the channel number to indicate that it is the User Channel (Fig 2.2).

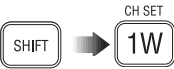


Fig 2.2 - User channel selected

The default setting for the User Channel is 16. Refer to section 3.3.1 for details on setting the User Channel.

2.3.1 Channel Sets

In addition to the standard International Channel, the RS87 can also be programmed with regional Auxiliary Channels, such as the marina channels M and M2 in the UK, the USA weather channels and the fishing or leisure channels in Scandinavia.



To display the channel sets available, press **Shift** followed by **1W (Ch Set)**. Multiple presses of the **1W** key while still in Shift Mode will scroll through the available channel sets.

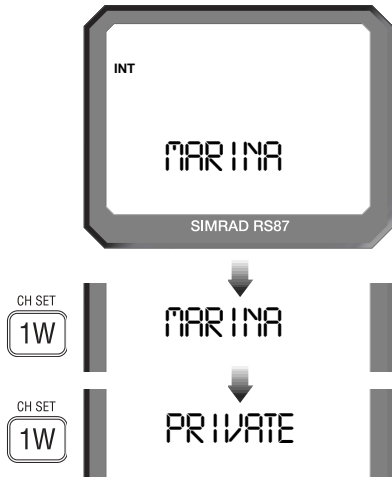


Fig 2.3 - Selecting auxiliary channel sets
(sets must be available to be displayed)

When the required channel set is displayed, enter the channel number using the numeric keypad - eg “2” for M2 (Fig 2.4) -

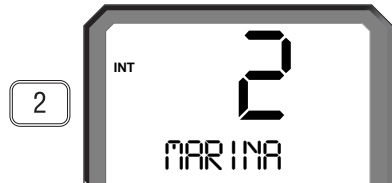


Fig 2.4 - Selecting auxiliary channel number

The only exception to this is when selecting UK marina channel M, which has no number associated with it. Simply selecting the marina channel set will automatically select it.

NOTE

If no numeric keys are pressed within two seconds the radio will revert to the previous working channel (except for marina channel M as noted above).

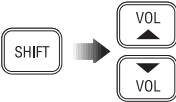
2.4 Volume adjustment



To adjust the volume, press the **VOL▲** and **VOL▼** keys to increase and decrease the setting respectively. Press and hold the key to increase/decrease the setting rapidly.

The volume setting can be between 1 and 24 (loud).

2.5 Squelch adjustment



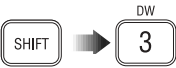
To adjust the squelch setting, press the **SQ** key to enter squelch adjustment mode, then press the **▲** and **▼ (VOL)** keys to increase or decrease the squelch respectively. Press and hold the key to increase/decrease the setting rapidly.

The squelch setting can be between 0 (open) and 10.

NOTE

Squelch mode will automatically time out after two seconds if another key is not pressed. Squelch mode can also be cancelled by pressing the **ON/C** key.

2.6 Dual Watch mode



Dual Watch allows the radio to scan between the selected working channel and the watch channel (the priority channel - normally 16).

To enter Dual Watch, select the required working channel, then press **Shift** and **3 (DW)** within two seconds.

If Dual Watch is selected while the handset is off cradle, the display will show "Place back on cradle". If the handset is replaced within ten seconds of selecting Dual Watch, it will automatically initiate Dual Watch when the handset is replaced.

The display will show "D/W" - the large digits on the display indicate the working channel, with the watch channel shown below in small digits (Fig 2.5) -

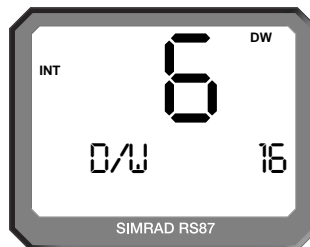


Fig 2.5 - Dual Watch mode

If the radio detects a signal on the watch channel, it will lock onto this and the large digits will change to show the watch channel.

NOTE

All other stations will also show the Dual Watch display.

NOTE

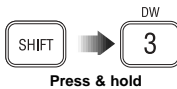
Normal VHF functions will not be available when in Dual Watch mode. To exit Dual Watch press **16**, **ON/C** or lift the handset from the cradle.

2.7 Tri Watch mode

Tri Watch allows the radio to scan between the selected working channel, the user channel and the watch channel.

NOTE

Tri Watch cannot be selected if the user channel is set to Ch16.



To enter Tri Watch, select the required working channel, press **Shift** and then press and hold the **3 (DW)** for two seconds.

If Tri Watch is selected while the handset is off cradle, the display will show "Place back on cradle". If the handset is replaced within ten seconds of selecting Tri Watch, it will automatically initiate Tri Watch when the handset is replaced.

The display will show "T/W" - the large digits on the display indicate the working channel, with the user channel and watch channel shown below in small digits (Fig 2.6) -

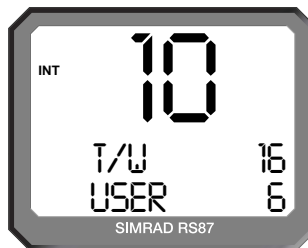


Fig 2.6 - Tri Watch mode

If the radio detects a signal on the user or watch channels, it will lock onto this and the large digits will change to show the relevant channel.

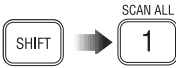
NOTE

All other stations will also show the Tri Watch display.

NOTE

Normal VHF functions will not be available when in Tri Watch mode. To exit Tri Watch press **16**, **ON/C** or lift the handset from the cradle.

2.8 All Scan mode



The scan function cycles the RS87 sequentially through each enabled channel, pausing when a signal is detected.

Press **Shift** followed by **1** (**Scan All**) to enter All Scan Mode.

If Scan is selected while the handset is off cradle, the display will show “Place back on cradle”. This function will be cancelled if the handset is not returned to the cradle within 10 seconds.

The display will show “Scan All” on the display. If the radio detects a signal, it will lock onto this and the large digits will change to show the relevant channel number (Fig 2.7) -

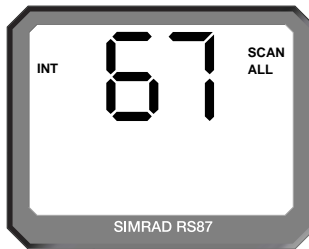


Fig 2.7 - All Scan mode



If the radio locks onto a busy channel, pressing **OK** will manually continue the scan. All Scan will otherwise automatically restart when the channel becomes clear.

NOTE

All other stations will also show the All Scan display.

NOTE

While in scan mode, normal VHF functions are not available. To exit All Scan press **16**, **ON/C** or lift the handset from the cradle.

2.8.1 Dynamic All Scan Inhibit



If the radio is constantly locking onto a busy channel when scanning, this channel can be inhibited from the scan by pressing **Shift** then **1** while locked on that channel.

The display will show “Channel Inhibited” and the channel will no longer be included in the scan cycle.

The channel can be reinstated using the menu option described in section 3.1.1.

2.9 Memory Scan mode

Memory Scan gives the option of scanning a preprogrammed set of channels specified by the user (see sections 3.1.4 and 3.1.5).



Press **Shift** then **2 (Scan M)** to enter Memory scan mode.

If Memory Scan is selected while the handset is off cradle, the display will show "Place back on cradle". If the handset is replaced within ten seconds of selecting Memory Scan, it will automatically initiate Memory Scan when the handset is replaced.

The display will show "Scan M" on the display. If the radio detects a signal, it will lock onto this and the large digits will change to show the relevant channel (Fig 2.8) -

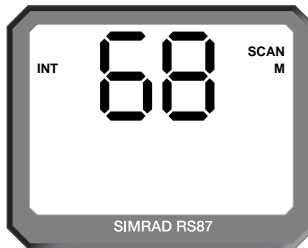


Fig 2.8 - Memory Scan mode



If the radio locks onto a busy channel, pressing **OK** will manually continue the scan. Memory Scan will otherwise automatically restart when the channel becomes clear.

NOTE

If only one channel has been entered into the memory then initiating Memory Scan will retune the RS87 to the stored channel.

NOTE

All other stations will also show the Memory Scan display.

NOTE

While in memory Scan mode, normal VHF functions are not available. To exit Memory Scan press **16, ON/C** or lift the handset from the cradle.

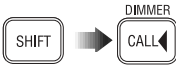
2.9.1 Dynamic Memory Scan Delete

If the radio is constantly locking onto a busy channel when scanning, this channel can be removed from the Memory Scan channel set by pressing **Shift** then **2** while locked on that channel.



The display will show "Channel Deleted" and the channel will no longer be included in the scan cycle.

2.10 Adjusting backlighting



The display and keypad are backlit - to set the backlighting level press **Shift** followed by **Call** ◀ (**Dimmer**) to enter back-light mode.



Use the ▲ and ▼ (**VOL**) keys to adjust the backlighting level from off through to level 5..



Press **Ok** or **ON/C** to exit the backlight mode at the selected level.

NOTE

Backlighting levels will only affect this station.

2.11 Handset off cradle

When a handset is lifted off cradle, all other stations will show “Occupied” on the display (Fig 2.9). This means that these stations are locked out until the handset is returned to the cradle, unless the station is being called on intercom by the handset.

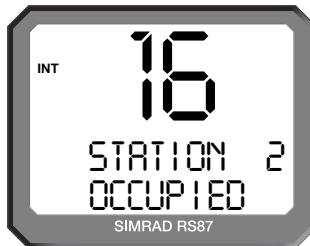
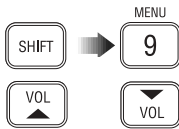


Fig 2.9 - Station 2 handset is in use

NOTE

The handset plugged into the lowest numbered port is designated the Master unit. Lifting the Master handset will override all other stations, even if it is displaying “Occupied” - all other stations will then display “Occupied” and be locked out.

3. MENU MODE



Menu mode is used to adjust the various settings of the radio, such as channels inhibited from the scan functions, MMSI number programming and User channel selection.

To enter Menu mode, press **Shift** followed by **9 (Menu)**.

Use the the **VOL▲** and **VOL▼** keys to scroll through the various menu options -

- **Scanning** (section 3.1)

Options related to the various scanning functions such as channel inhibit, memory scan select and scan dwell time.

- **Numbers** (section 3.2)

Entering of ID numbers such as MMSI, Group MMSI and ATIS number (if applicable in country of use).

- **VHF Items** (section 3.3)

Miscellaneous options such as selection of User channel, last used channel, interrupt intercom and speaker settings.



To select an option, press **Ok**.

To return to normal radio operation, press **On/C**.

NOTE

Entering Menu mode will inhibit the operation of the radio. Exit Menu mode before returning the handset to the cradle to permit normal operation.

3.1 Scanning



Once the Scanning menu option has been selected (see introduction to section 3), use the **VOL▲** and **VOL▼** keys to scroll through the menu options -

All Scan inhibit (section 3.1.1)

All Scan reset (section 3.1.2)

All Scan show (section 3.1.3)

Memory Scan select (section 3.1.4)

Memory Scan clear (section 3.1.5)

Memory Scan show (section 3.1.6)

Scan dwell time (section 3.1.7)



To select an option, press **Ok**.

To return to the main menu, press **On/C**.

3.1.1 All Scan inhibit

If the radio is constantly locking onto a busy channel when scanning, this channel can be inhibited from the scan cycle.



From the Scanning menu (see section 3.1) select All Scan Inhibit and press **Ok**.

Enter the relevant channel number using the numeric keypad. The display will show the channel number and it's inhibit status - "All Scan" for enabled, or "All Scan Inhibited" for inhibited (Fig 3.1) -

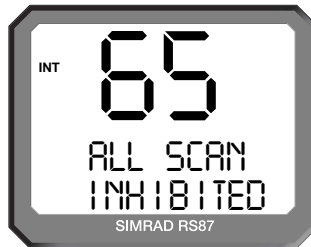


Fig 3.1 - Selected channel inhibited from scan



Press **Ok** to change the channel's inhibit status - i.e if it is enabled, pressing **Ok** will inhibit it and vice versa. If the channel is inhibited, it will no longer be included in the All Scan cycle. Enabling the channel will re-include it.

Additional channels can be inhibited/enabled by entering the channel number and repeating the above procedure.



To exit, press the **VOL▲** or **VOL▼** key to select another Scanning menu option, or press **On/C** to return to the main menu.

3.1.2 All Scan reset

This function will reset all inhibited channels so that they are enabled.



From the scanning menu (section 3.1) select All Scan Reset and press **Ok** - the display will show "Channels Reset" (Fig 3.2) -



Fig 3.2 - All inhibited channels reset



Press the **VOL▲** or **VOL▼** key to select another Scanning menu option, or **On/C** to return to the main menu.

3.1.3 All Scan show

This function displays all the inhibited channels.



From the scanning menu (section 3.1) select All Scan Show and press **Ok**. The display will then show “Showing Channels” and display all the inhibited channels in sequence.



Press the **VOL▲** or **VOL▼** key to select another Scanning menu option, or **On/C** to return to the main menu.

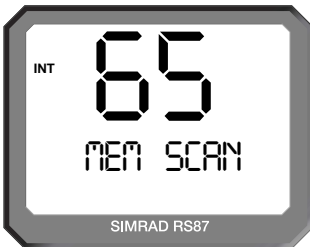
3.1.4 Memory Scan select

This function selects the channels to be used in the Memory Scan cycle (see section 2.9).

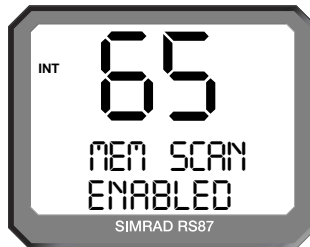


From the scanning menu (section 3.1) select Memory Scan Select and press **Ok** - the display will show “Mem Scan Select”.

Enter the relevant channel number using the numeric keypad. The display will show the channel number and it's memory status - “Mem Scan” if it is not currently selected for Memory Scan, or “Mem Scan Enabled” if it is already selected (Fig 3.3) -



CHANNEL CURRENTLY NOT SELECTED



CHANNEL ALREADY SELECTED

Fig 3.3 - Selecting channel for Memory Scan



Press **Ok** to change the channel's Memory Scan status - i.e if it is not selected, pressing **Ok** will add it to the Memory Scan cycle and vice versa.

Additional channels can be added/removed by entering the channel number and repeating the above procedure.



Press the **VOL▲** or **VOL▼** key to select another Scanning menu option, or **On/C** to return to the main menu.

NOTE

North American users - Only one Weather channel can be entered into Memory Scan - if another one is selected, it will override the existing channel. The Weather channel is not scanned as part of the Memory Scan sequence - it is used by the Weather Watch function (see section 6.1).

3.1.5 Memory Scan clear

Memory Scan Clear will reset all channels selected for Memory Scan so that they are disabled.



From the scanning menu (section 3.1) select Memory Scan Clear and press **Ok** - the display will show “Channels Cleared” (Fig 3.4) -



Fig 3.4 - Selecting channel for Memory Scan



Press the **VOL▲** or **VOL▼** key to select another Scanning menu option, or **On/C** to return to the main menu.

3.1.6 Memory Scan show

This function displays all channels selected for Memory Scan.



From the scanning menu (section 3.1) select Memory Scan Show and press **Ok**. The display will then show “Showing Channels” and display all the Memory Scan selected channels in sequence.



Press the **VOL▲** or **VOL▼** key to select another Scanning menu option, or **On/C** to return to the main menu.

3.1.7 Scan dwell time

This function is used to select the amount of time the RS87 remains on a channel after it has locked onto it during a scanning function (All Scan, Memory Scan) and the signal is lost.

From the scanning menu (section 3.1) select Scan Dwell Time and press **Ok** - the display will show “Scan Dwell Time xx”, where xx is the current dwell time in seconds (Fig 3.5) -



Fig 3.5 - Scan dwell time

The default time is 0, meaning that the scan will continue as soon as the signal is lost. There are 11 levels from 0-10 seconds - use the numeric keys to enter the scan dwell time and press **Ok** to select - the display will show “Dwell Time xx Seconds”.



Press the **VOL▲** or **VOL▼** key to select another Scanning menu option, or **On/C** to return to the main menu.

3.2 Numbers

The Numbers menu is used for entering ID numbers such as MMSI, Group MMSI and ATIS (if applicable in country of use).



Once the Numbers menu option has been selected (see introduction to section 3), use the **VOL▲** and **VOL▼** keys to scroll through the menu options -

Ship's MMSI (section 3.2.1)

ATIS Number (section 3.2.2)

Group MMSI (section 3.2.3)

NOTE

The ATIS Number option will only be shown if the radio is ATIS enabled. This feature is only available for sets used in Benelux and the Rhine/Danube waterways.



To select an option, press **Ok**.

To return to the main menu, press **On/C**.

3.2.1 Ship's MMSI

Ship's MMSI will display the boat's MMSI number if it has already been entered, or will allow the MMSI to be entered if the radio is being used for the first time.

From the Numbers menu (section 3.2) select Ship's MMSI and press **Ok** - the display will show "Ships MMSI" and the MMSI number (unless the number has not been entered yet, in which case it will show "-----" - Fig 3.6).



Fig 3.6 - Entering MMSI Number

CAUTION

The MMSI number can only be entered once and cannot be edited by the user. If it is necessary to change the MMSI (for example if the radio is being moved to another boat), the radio must be sent to an authorised Simrad service agent for reprogramming.



To enter the MMSI number press **Ok** again. The display will show ENTER MMSI and the first dash in the number will start flashing to indicate that entry can begin.

Enter the nine digit MMSI number using the numeric keypad and press **Ok**. The radio will then ask that the MMSI is re-entered to confirm. If the two numbers do not match, the MMSI will need to be re-entered and re-confirmed.



Use the **Call** ◀ and **MSG** ▶ keys to move the cursor to correct any errors. The cursor position is indicated by the number flashing. Enter a new number to overwrite the incorrect number.

NOTE

The MMSI number will not be accepted unless all 9 characters have been entered.



Press the **VOL**▲ or **VOL**▼ key to select another Numbers menu option, or **On/C** to return to the main menu.

3.2.2 ATIS number

NOTE

This section applies only to radios used in countries where the ATIS system is in operation (Benelux and the Rhine/Danube waterways). This option will only appear on ATIS equipped radios.

From the Numbers menu (section 3.2) select ATIS No. - the display will show “ATIS No.” and the ATIS number (unless the number has not been entered yet, in which case it will show “_____”).

CAUTION

The ATIS number can only be entered once and cannot be edited by the user. If it is necessary to change the ATIS number, the radio must be sent to an authorised Simrad service agent for reprogramming.

To enter the ATIS number press **Ok** again. The display will show ENTER ATIS and the first dash in the number will start flashing to indicate that entry can begin.



Enter the nine digit ATIS number using the numeric keypad and press **Ok**. The radio will then ask that the number is re-entered to confirm. If the two numbers do not match, the number will need to be re-entered and re-confirmed.



Use the **Call** ◀ and **MSG** ▶ keys to move the cursor to correct any errors. The cursor position is indicated by the number flashing. Enter a new number to overwrite the incorrect number.

NOTE

The ATIS number will not be accepted unless all 9 digits have been entered - the prefix 9 is automatically inserted by the radio.



Press the **VOL▲** or **VOL▼** key to select another Numbers menu option, or **On/C** to return to the main menu.

3.2.3 Group MMSI

For boats that are part of a flotilla, racing/fishing fleet or other group, a Group ID MMSI number can also be entered and used to contact other boats in the same fleet.

NOTE

The Group MMSI number may be allocated on a temporary basis by the local administration, for this reason the number can be changed by the user.

From the Numbers menu (section 3.2) select Group MMSI - the display will show "Group MMSI" and the Group MMSI number (unless the number has not been entered yet, in which case it will show "0 _ _ _ _ _").



To enter the Group MMSI number press **Ok** again. The display will show ENTER MMSI and the first dash in the number will start flashing to indicate that entry can begin.



The first digit of a Group MMSI is always 0, and this is preselected by the radio. Enter the remaining 8 digits using the numeric keypad and press **Ok** (Fig 3.7) -

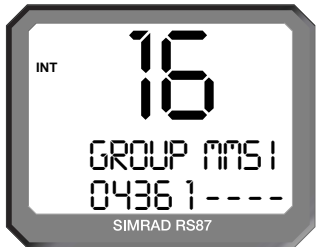


Fig 3.7 - Entering Group MMSI number



Use the **Call◀** and **MSG▶** keys to move the cursor to correct any errors. The cursor position is indicated by the number flashing. Enter a new number to overwrite the incorrect number.

NOTE

The number will not be accepted unless all 8 remaining digits have been entered.



Press the **VOL▲** or **VOL▼** key to select another Numbers menu option, or **On/C** to return to the main menu.

3.3 VHF items

The VHF items menu contains the settings for miscellaneous items such as user channel, position view, auxiliary audio and speaker settings amongst others.

Once the VHF items menu option has been selected (see introduction to section 3), use the **VOL▲** and **VOL▼** keys to scroll through the menu options -

- User channel (section 3.3.1)
- Position view (section 3.3.2)
- Last used channel (section 3.3.3)
- Interrupt intercom (section 3.3.4)
- Auxiliary audio (section 3.3.5)
- Speaker settings (section 3.3.6)
- Scrambler codes (only if scrambler option is fitted)
- Serial number

To select an option, press **Ok**.

To return to the main menu, press **On/C**.

3.3.1 User channel

This is a user programmable priority channel that is used in the Tri-watch function and is selected by pressing the **User** key.

From the VHF items menu (section 3.2) select User Channel and press **Ok** - the display will show "User Channel".



Enter the channel number using the numeric keypad and press **Ok**. The display will show "Set User Channel" (Fig 3.8) -

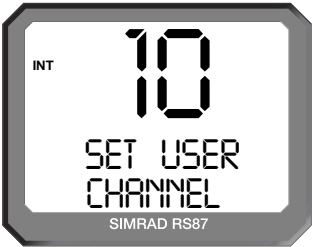


Fig 3.8 - Setting the User Channel

Press the **VOL▲** or **VOL▼** key to select another VHF items menu option, or **On/C** to return to the main menu.



3.3.2 Position view

This option allows the user to view the current GPS position that will be used if a distress call is made (Fig 3.9). The function of this option depends on whether the position is being received automatically via NMEA, or if it has been entered manually.

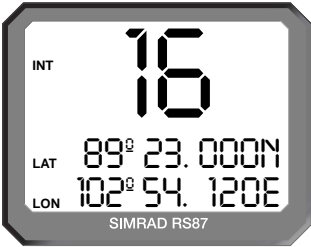


Fig 3.9 - Position display

From the VHF items menu (section 3.2) select Position View and press **Ok**.



If GPS position information is being received, the display will show "Position View Off". Press the **Ok** key to toggle between ON and OFF. When this option is turned on, the bottom two lines of the display will show the current Lat / Long position on all handsets. If the volume or squelch is adjusted, the display will show the settings while the up/down keys are operated, before reverting to the position display.



If no GPS position information is being received, the display will show "View". Pressing **Ok** will show the manual position entered, or the last known GPS position. If there has not been a position entered, the Lat and Long display will show all 9's. Press the **VOL▲** or **VOL▼** key to toggle between position and time (UTC) displays.



Press **On/C** to exit.

3.3.3 Last used channel

Normally the RS87 will power up on the programmed start up channel (usually the priority channel). This function enables the radio to power up on the last used channel - the default setting is off.

From the VHF items menu (section 3.2) select Last Used Chan and press **Ok** - the current status will be shown - "On" or "Off".

Press **Ok** to toggle between the On and Off settings.

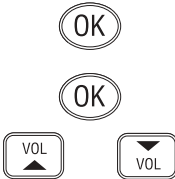


Press the **VOL▲** or **VOL▼** key to select another VHF items menu option, or **On/C** to return to the main menu.



3.3.4 Interrupt intercom

This function is used to specify whether intercom or loudhailer functions should be interrupted when an incoming VHF transmission is received - the default setting is "Yes".



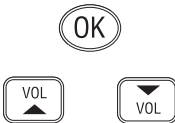
From the VHF items menu (section 3.2) select Interrupt Intercom and press **Ok** - the display will show "Interrupt Intercom" and the current status - "Y" or "N".

Press **Ok** to toggle between Yes and No interrupt.

Press the **VOL▲** or **VOL▼** key to select another VHF items menu option, or **On/C** to return to the main menu.

3.3.5 Auxiliary audio

The Auxiliary Audio input allows an outside audio source to be connected to the radio and outputted through the speaker/intercom system (eg an FM receiver for weather forecasts etc).



From the VHF items menu (section 3.2) select Auxiliary Audio and press **Ok** to enter the Auxiliary Audio sub-menu.

Press the **VOL▲** or **VOL▼** keys to select the required Auxiliary Audio settings option -

Use Aux AF

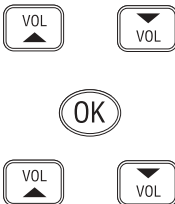
Interrupt Aux AF



To turn the Auxiliary Audio input on, select "Use Aux AF" - the display will show "Use Aux AF" and the current status ("No" or "Yes"). Press **Ok** to toggle between the On and Off settings. If the Aux AF option is switched on, the external audio source will be outputted through all speakers in the system at the set volume level.

NOTE

When this option is turned on, the display will show "Using Aux Audio" on the bottom line of the display. If the volume or squelch is adjusted, the volume/squelch settings will be shown while they are being adjusted, then revert to this display.



To specify whether the Auxiliary Audio input should be interrupted if an incoming VHF transmission is received select "Interrupt Aux AF" using the **VOL▲** or **VOL▼** key - the default setting is "Yes".

Press **Ok** to toggle between Yes and No interrupt.

Press the **VOL▲** or **VOL▼** key to select another Auxiliary Audio sub-menu option, or **On/C** to return to the VHF Items menu. Press **On/C** again to return to the main menu.

3.3.6 Speaker settings

The Speaker Settings option is used to set the individual default volume levels for each station, intercom and loudhailer in the system.

From the VHF items menu (section 3.2) select Speaker Settings and press **Ok** to enter the Speaker Settings sub-menu. Press the **VOL▲** or **VOL▼** keys to scroll through each speaker, displaying the default volume level for each one.

NOTE

Only connected speakers will be shown.

The first option in the sub-menu is Reset To Defaults (Fig 3.10) - pressing **Ok** when this option is displayed will reset all speaker levels to their default settings - the display will show "Resetting Levels".

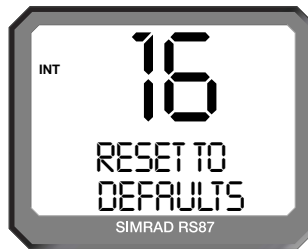


Fig 3.10 - Resetting speaker settings to defaults

To set the required volume levels for each individual position, use the **VOL▲** or **VOL▼** keys to select the required station and press **Ok**. The selected speaker will then emit a continuous tone indicating the current volume level. Press **VOL▲** or **VOL▼** to adjust the volume level as suitable and press **Ok** to confirm.

Press the **VOL▲** or **VOL▼** keys to select another station and repeat the above procedure, or **On/C** to return to the VHF Items menu. Press **On/C** again to return to the main menu.

4. DSC FUNCTIONS

4.1 General

The RS87 features full Class D DSC (Digital Selective Calling) functionality, which enables the user to make digitally selected calls - quicker and simpler to make than traditional voice calls using Channel 16. Should a distress situation occur, a Distress Alert call can be initiated, indicating the vessel's identity, position and automatically establish distress communication on the emergency voice channel (normally Channel 16)

NOTE

DSC functions will only be available if the MMSI number has been entered into the radio (see section 3.2.1).

4.2 Making a call

4.2.1 Individual Routine call



Press the **Call** key to enter the Individual Routine call function.



Either manually enter the MMSI number of the station using the numeric keypad, or press the **VOL▲** and **VOL▼** keys to scroll through the MMSI number directory (Fig 4.1). Press **Ok** to confirm the selected entry.



Fig 4.1 - Selecting a number from the MMSI directory



Enter the required working channel using the numeric keypad, or use the **VOL▲** or **VOL▼** keys to scroll through the four default reply channels (06, 08, 72 & 77). Press **Ok** to confirm.

NOTE

Only simplex channels can be selected as the working channel.

NOTE

If the MMSI entered is for a coast station, the option to select a working channel will not be available - this is specified by the coast station, and will normally be a duplex channel.



The display will show "Press Ok To Send" - press **Ok** to initiate the call, or **On/C** to abort.

On initiation of the call, the display will show “Awaiting Acknowledg” (Fig 4.2). Once an acknowledgement is received, the radio will automatically switch to the specified working channel.



Fig 4.2 - Call sent, awaiting acknowledgment from recipient

NOTE

If an acknowledgement is not received, the radio will continue showing the “Awaiting Acknowledg” display for 4.5 minutes before timing out and returning to normal operation.

4.2.2 Public Correspondence call

For vessels within range of a country operating the necessary network, the RS87 can be used to directly make and receive Public Correspondence calls from a land based telephone system via a coast station.



Press **Shift** then **On/C** to enter the Public Correspondence call function.



Either manually enter the telephone number using the numeric keypad (Fig 4.3), or press the **VOL▲** and **VOL▼** keys to scroll through the telephone number directory. Press **Ok** to confirm the selected entry.

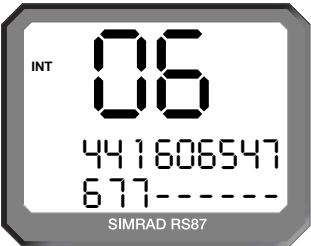


Fig 4.3 - Dialling a number manually

NOTE

Check with your local network provider for usage instructions.



The next stage is to specify the coast station the call is to be routed through. Either manually enter the MMSI number of the coast station using the numeric keypad, or press the **VOL▲** and **VOL▼** keys to scroll through the Coast Station MMSI number directory (Fig 4.4). Press **Ok** to confirm the selected entry.



Fig 4.4 - Selecting a Coast Station from the coast station directory

NOTE

The MMSI number entered must have two leading zeros (indicating a coast station), or it will not be accepted.



The display will show “Press Ok To Send” - press **Ok** to initiate the call, or **On/C** to abort.

On initiation of the call, the display will show “Attempting To Connect”. If the call cannot be connected for any reason, the display will show “Cannot Connect”, then “Pls Wait 15 Minutes” before returning to the default display.

If the call is connected, the display will show “Call In Progress” (Fig 4.5) - press the **PTT** key to talk and release to listen.



Fig 4.5 - Call has been connected

NOTE

The channel number displayed during the call is determined by the Coast Station.



Press **On/C** to end the call, or wait for the other end to replace the receiver.

4.2.3 All Ships Safety call

To make an All Ships Safety call, lift the protective cover on the front of the handset and press the **Safety** key. The display will show "Safety on Ch 16" (Fig 4.6) -

SAFE



Fig 4.6 - Making an All Ships Safety call

Enter the required working channel using the numeric keypad, or use the **VOL▲** or **VOL▼** keys to scroll through the four default reply channels (06, 08, 72 & 77). Press **Ok** to confirm.

NOTE

Only simplex channels can be selected as the working channel.



The display will show "Press Ok To Send" - press **Ok** to initiate the call, or **On/C** to abort.

4.2.4 All Ships Urgency call

To make an All Ships Urgency call, lift the protective cover on the front of the handset and press the **Urgency** key. The display will show "Urgency on Ch 16" (Fig 4.7) -

URG

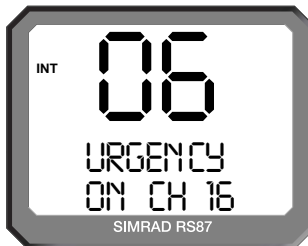


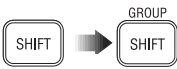
Fig 4.6 - Making an All Ships Urgency call

NOTE

As All Ships Urgency calls must use Ch 16 for voice communication, the option to manually select a working channel is not available.



The display will show "Press Ok To Send" - press **Ok** to initiate the call, or **On/C** to abort.



4.2.5 Group call

Press the **Shift** key twice to enter the Group call function - the display will show the Group MMSI number stored in the radio (see section 3.2.3).



Enter the required working channel using the numeric keypad, or use the **VOL▲** or **VOL▼** keys to scroll through the four default reply channels (06, 08, 72 & 77). Press **Ok** to confirm (Fig 4.7) -

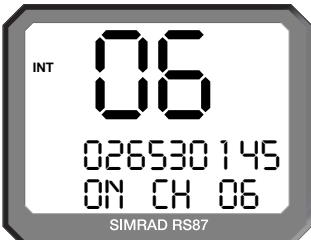


Fig 4.7 - Making a Group Call

NOTE

Only simplex channels can be selected as the working channel.



The display will show “Press Ok To Send” - press **Ok** to initiate the call, or **On/C** to abort.

WARNING

4.2.6 Distress Alert call

This call should only be made if the vessel is in a genuine distress situation. **It is an offense to send a Distress Alert call if the vessel or crew are not in danger.**



The distress button is located under the protective cover on the front of the handset. Press the **Distress** button to access the Distress Alert call function - the display will show “Distress Undefined” (Fig 4.8) -



Fig 4.8 - Distress Alert menu

ctd -



Use the **VOL▲** or **VOL▼** keys to scroll through the available Nature of Distress categories -

- Undefined (default)
- Abandoning
- Piracy
- MOB
- Fire
- Flooding
- Collision
- Grounding
- Listing
- Sinking
- Adrift

SAFE

Press and **HOLD** the **Distress** key to begin the 5 second count-down - the large digits will count down from 5 to 1 before initiating the distress alert - the display will show "Sending Alert" (Fig 4.9) -



Fig 4.9 - Sending a Distress Alert

NOTE

ON/C

The Distress Alert call can be aborted if the **Distress** key is released at any time before the 5 second countdown has ended. Press **On/C** to return to normal radio operation.

The Distress Alert call sent includes the vessel's MMSI, the nature of the distress as specified, the time the call was sent and the current position of the vessel (if the appropriate navigational receiver is connected to the radio, or a manual position has been entered - see section 6.3).

The radio will switch to monitoring channel 16 and the display will show "Awaiting Acknowledg" until an acknowledgement is received. The radio will automatically repeat the Alert approximately every four minutes until either an acknowledgement is received, or **On/C** is pressed (it is not recommended that the Distress Alert is cancelled manually by pressing **On/C** unless you are requested to do so by the rescue authorities).

When an acknowledgement is received from the Rescue Co-ordination Centre, this will automatically cancel the Distress Alert transmission. The subsequent rescue co-ordination will be performed using the voice working channel (Ch 16).

WARNING

If a DSC distress alert is sent accidentally, cancel it immediately on the RD87 by pressing the **On/C** button to prevent repeats, then make the following announcement on channel 16 -

“This is *(name of vessel, callsign, MMSI)*”
“Cancel DSC Alert sent *(date & time UTC)*”

Do not simply cancel the DSC alert without verbally cancelling it as well, otherwise the rescue authorities will not be aware that this is a false alarm.

4.3 Receiving a call

4.3.1 Individual Routine call

If an Individual Routine call is received, the radio will sound an incoming call alarm.

The display will flash between displaying “Call From”, the caller’s MMSI and the specified working channel (Fig 4.10). If the caller’s MMSI is stored in the MMSI directory (see section 5.2), then the display will show the name stored instead of the MMSI number.



Fig 4.10 - Receiving incoming Individual Routine call

Press **Ok** to accept the call or **On/C** to reject the call.

If the call has been accepted, the display will show “Send Acknowledg”. Press **Ok** to send a call acknowledgement and automatically switch to the specified working channel.



4.3.2 Public Correspondence call

A Public Correspondence call is a call made from a landbased telephone which is routed via a coast station. This is only available in countries operating the necessary network.

NOTE

At present, it is not possible to receive incoming calls on the Public Correspondence network - calls can only be made from the radio. This section is for reference purposes only.

When a Public Correspondence call is received the radio will sound an incoming call alarm.

The display will flash between displaying "Tel Call From" and the caller's telephone number. If the caller's number is stored in the Telephone Number directory (see section 5.3), then the display will show the name stored instead of the telephone number (Fig 4.11) -



Fig 4.11 - Receiving incoming Public Correspondence call



Press **Ok** to accept the call or **On/C** to reject the call - the display will show "Call In Progress".

NOTE

As the telephone call is transmitted via a VHF channel specified by the coast station, it will still be necessary to press the **PTT** key to talk and release it to listen, as with a normal VHF call. The coast station will disconnect the call if the PTT is not pressed for 5 seconds at least every 45 seconds.



To end the call, press the **On/C** key, or wait until the caller replaces the receiver (an End Call signal will be sent to the radio). Replace the handset in the cradle.

4.3.3 All Ships Safety call

If an All Ships Safety call is received, the radio will sound an incoming call alarm.

The display will flash between displaying “All Ships Safety” and the caller’s MMSI. If the caller’s MMSI is stored in the MMSI directory (see section 5.2), then the display will show the name stored instead of the MMSI number.



Press **Ok** to accept the call - the display will change to “Reply On Ch X”, where X is the specified working channel, or **On/C** to reject the call.



Press **Ok** again to automatically switch to the working channel.

4.3.4 All Ships Urgency call

If an All Ships Urgency call is received, the radio will sound an incoming call alarm.

The display will flash between displaying “All Ships Urgency” and the caller’s MMSI. If the caller’s MMSI is stored in the MMSI directory (see section 5.2), then the display will show the name stored instead of the MMSI number (Fig 4.12) -

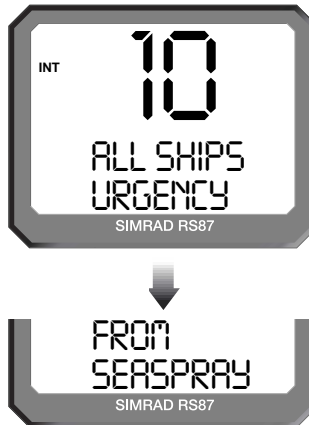


Fig 4.12 - Incoming All Ships Urgency call



Press **Ok** to accept the call and automatically switch to channel 16, or **On/C** to reject the call.

NOTE

All Ships Urgency calls always use channel 16 as the working channel.

4.3.5 Group call

If the radio has a Group MMSI number entered (see section 3.2.3) and a Group call is received, the radio will sound an incoming call alarm.

The display will flash between displaying “Routine Group Call” + the caller’s MMSI and the specified working channel (Fig 4.13). If the caller’s MMSI is stored in the MMSI directory (see section 5.2), then the display will show the name stored instead of the MMSI number.



Fig 4.13 - Incoming Group call



Press **Ok** to accept the call - the display will change to “Reply On Ch X” (Fig 4.14), where X is the specified working channel, or **On/C** to reject the call.



Fig 4.14 - Working channel specified by incoming Group call



Press **Ok** again to automatically switch to the working channel.

4.3.6 Distress Alert call

If a Distress Alert call is received, the radio will sound an incoming call alarm.

The display will flash between displaying “Distress Alert” and the caller’s MMSI along with the nature of the distress alert.

If the caller’s MMSI is stored in the MMSI directory (see section 5.2), then the display will show the name stored instead of the MMSI number (Fig 4.15) -

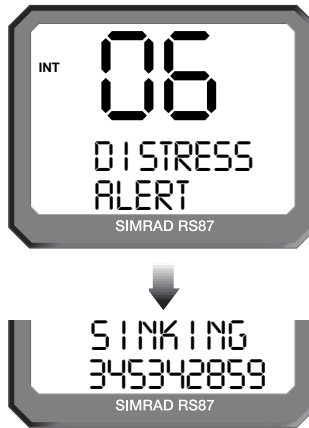


Fig 4.15 - Incoming Distress Alert call



Press **Ok** to accept the call and automatically switch to channel 16, or **On/C** to reject the call.

The full details of the Distress Alert may be viewed in the log (see section 4.4).

NOTE

Distress Alert calls always use channel 16 as the working channel.

4.3.7 Distress Alert acknowledgement

If an acknowledgement is received for a Distress Alert sent (normally from a coast station or rescue co-ordination centre), the radio will sound an incoming call alarm.

The display will flash between displaying “Distress Acknowledg” and the MMSI of the vessel in distress, or your MMSI if the Distress Alert was sent by the RS87 and the Distress Alert transmission sent has been cancelled.

If the vessel's MMSI is stored in the MMSI directory (see section 5.2), then the display will show the name stored instead of the MMSI number (Fig 4.16) -

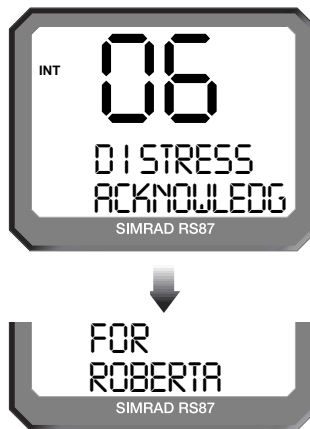


Fig 4.16 - Distress Acknowledgment received

NOTE

The MMSI / name displayed will be that of the vessel in distress, not the station that has acknowledged the call.



Press **Ok** to accept the acknowledgment and automatically switch to channel 16, or **On/C** to ignore the call.

NOTE

Distress Alert calls always use channel 16 as the working channel.

4.3.8 Distress Relay call

The Distress Relay facility enables an incoming Distress Alert call to be passed onwards via boats within receiving distance of the call, thus increasing the potential range of the Distress Alert call.

If a Distress Relay call is received, the radio will sound an incoming call alarm.

The display will flash between displaying "Distress Relay" and the vessel's MMSI (Fig 4.17) -



Fig 4.17 - Incoming Distress Relay

If the vessel's MMSI is stored in the MMSI directory (see section 5.2), then the display will show the name stored instead of the MMSI number.

NOTE

The MMSI / name displayed will be that of the vessel in distress, not the vessel that relayed the call.



Press **Ok** to accept the call, automatically switch to channel 16 or **On/C** to reject the call.

4.4 Viewing the Call Log

The call log records details of the last 20 DSC or telephone calls received including the date and time received, the type of call and the caller id. There are two separate logs - one for “standard” calls, the other for distress calls.

NOTE All calls are logged, even those rejected by pressing **On/C**.



Press **MSG** ► enter the Call Log menu. If the call logs are empty the display will show “No Calls Received” before returning to the default display.



Press the **Call** ◀ and **MSG** ► keys to switch between the standard call log (indicated by “1” shown next to the large digits) and the distress call log (indicated by “2” shown next to the large digits).



Press **VOL** ▲ or **VOL** ▼ to scroll through the log entries - the display will show the call type and the date/time the call was received (Fig 4.18). The small digit shows the log type (1 - standard call log, 2 - distress call log) and the large digits show the entry number - the first entry shown is the most recent call.

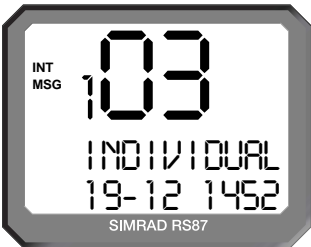


Fig 4.18 - Viewing Call Log entry

NOTE The date and time displayed uses the date/time data received from the navigational receiver interfaced to the radio, not from the incoming message. If a navigational receiver was not connected to the radio at the time the message is received the date and time will not be displayed.



Press **Ok** to view the details of the selected call - the display will show the caller’s number (Or the name if the number is stored in the directory).



Press **VOL▲** or **VOL▼** to display any relevant additional information - for example the nature of distress and position of the vessel in distress if viewing the distress call log (Fig 4.19) -

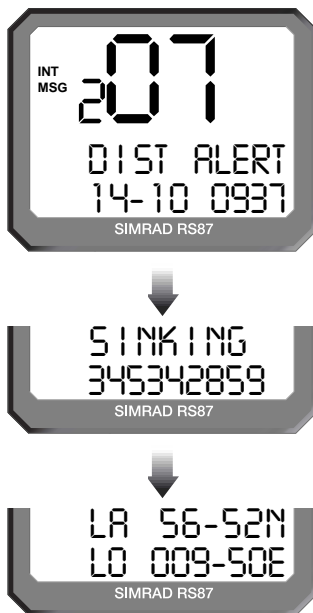


Fig 4.18 - Viewing Call Log entry



Press **On/C** to return to the log entries menu. Press **On/C** again to exit the Call Log menu.

4.5 Position over 4 hours old

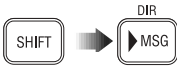
Normally current position data is supplied automatically to the radio via an interfaced navigational receiver (see section 7.2.7) or by manually entering a position (see section 6.3). If the last recorded position is over 4 hours old, the display will show "Position 4 Hours Old". Press **Ok** to confirm and manually enter a position (refer to section 6.3) or **On/C** to ignore the message.



NOTE

This display will be shown 30 minutes after switch on if there is no NMEA position data being received, or the position has not been manually entered.

5. THE DIRECTORY



The Directory function allows frequently used boat MMSI, Coast Station MMSI and telephone numbers to be stored in the radio. To enter the directory, press Shift then **MSG** ▶ (*Dir*).

5.1 Switching between the directories

The large digits will show the currently displayed entry number and the smaller digit to the left of the large digits will show the currently selected directory -

1. Boat MMSI directory
2. Telephone number directory
3. Coast Station MMSI directory



Press **Call** ◀ and **MSG** ▶ to switch between the directories.

5.2 Viewing the directory



Select the appropriate directory using the **Call** ◀ and **MSG** ▶ keys. Use the **VOL**▲ or **VOL**▼ keys to scroll through the directory entries (Fig 5.1) -

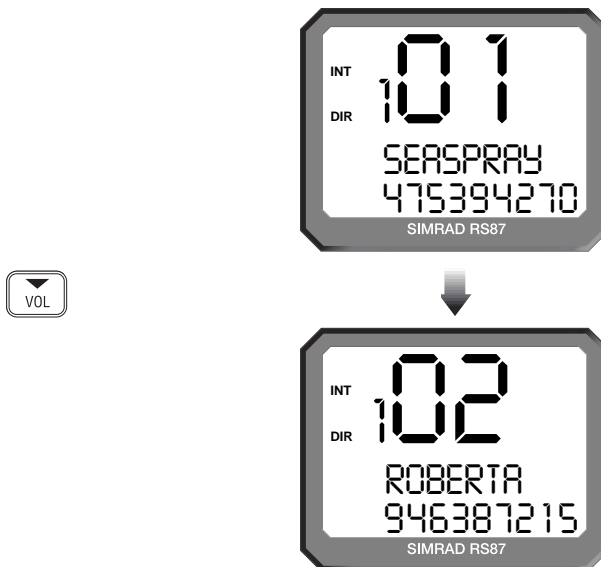


Fig 5.1 - Scrolling through the directory entries

5.3 Entering a number



Press **Ok** to begin entering a new number - the large digits will show the entry number in the directory (1 if it is the first entry).

Enter the name first - use the **VOL▲** or **VOL▼** keys to scroll through the alphabetical characters and the numeric keypad to enter any numbers (Fig 5.2)

Press **MSG▶** to move the cursor forward, or **Call◀** to move back and correct any errors (The cursor position is indicated by the character flashing - enter a new character to overwrite).

Press **Ok** to confirm the entry and move on to the MMSI entry.

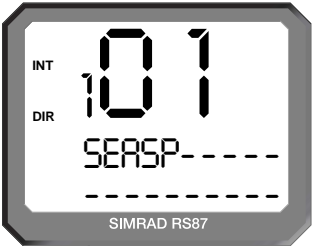


Fig 5.2 - Entering a new name into the directory



Use the numeric keypad to enter the number (Fig 5.3). Press the **Call◀** and **MSG▶** keys to move the cursor to correct any errors. The cursor position is indicated by the number flashing - enter a new number to overwrite the incorrect number.



Fig 5.3 - Entering the number



Press **Ok** to confirm and store the entry to the directory.

Press **On/C** at any time to abort to the default display.

NOTE

If using the Boat or Coast Station directories the entry will not be accepted unless all nine digits of the MMSI number have been entered.

5.4 Editing a number



Select the directory entry to be edited and press **Ok**. Use the **VOL▲** or **VOL▼** keys to highlight either the name or the number for editing - the selected field will flash. Press **Ok** again to begin editing the selected field.

Use the **Call◀** and **MSG▶** keys to move the cursor - the cursor position is indicated by the character flashing. Enter a new character to overwrite - use the numeric keypad to enter a number, or press **VOL▲** or **VOL▼** to scroll through the alphabetical characters (Fig 5.4) -

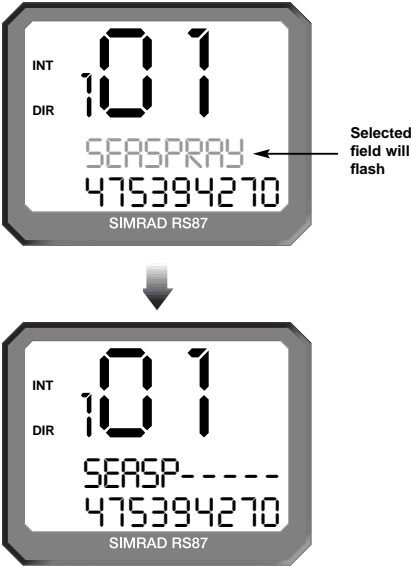


Fig 5.4 - Editing an existing directory entry

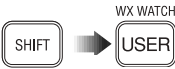


Press **Ok** to confirm and store the edited entry or **On/C** to abort entry.

6. MISCELLANEOUS FUNCTIONS

6.1 Selecting Weather Watch

The Weather Watch function enables the radio to monitor a single Weather channel specified in the Memory Scan Select function (see section 3.1.4). A transmission on a Weather channel is preceded by a tone - if this is detected by the radio, it will sound an alert allowing the user to switch to the Weather channel.



To enable Weather Watch, press **Shift** followed by the **User** key (**Wx Watch**). The “WX” legend will be shown in the top left of the display and the selected weather channel will be shown on the bottom line of the display (Fig 6.1) -

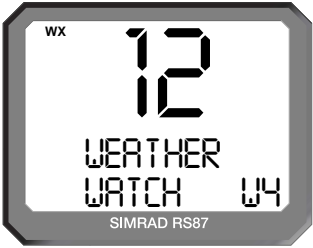


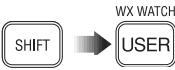
Fig 6.1 - Selecting Weather Watch mode

NOTE

If a Weather channel has not been specified, the display will show “No Wx Chan Selected” and Weather Watch will not be enabled. Refer to section 3.1.4 to select a Weather channel.

NOTE

If the Weather Watch function is not available (for example, if no Weather channels are programmed into the radio), the display will show “Wx Not Enabled”.



To cancel Weather Watch, press **Shift** followed by the **User** key (**Wx Watch**).

6.1.1 Weather Watch alert

If a Weather Alert tone is detected by the radio on the specified Weather channel while Weather Watch is enabled, the radio will sound a 10 second alarm and the display will show “Weather Alert”.



Press **Ok** to cancel the alarm and switch to the Weather channel, or **On/C** to cancel the alarm and ignore the Weather Alert.

NOTE

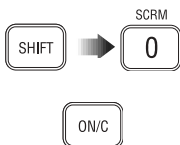
Because the Weather channels transmit a continuous carrier signal, it is not possible for the RS87 to detect when the transmission has ended.



Press **On/C** to return to the working channel once the transmission has ended.

6.2 Security mode (voice scrambler)

For additional security, a voice scrambler function is available as an optional accessory. The scrambler uses frequency inversion to encrypt the transmission and will allow secure transmission between compatible radios.

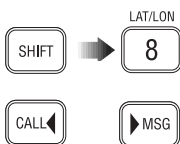


To enable Security mode press **Shift** followed by **0 (Scrm)**. The display will show “Sec” indicating that Security mode is on.

To exit Security mode, press **Shift** followed by **0 (Scrm)** again, or press **On/C**. Security mode will be cancelled if the RS87 is placed into another mode that requires the use of the **PTT** key (i.e Hailer/Intercom) or if a DSC call is made/received.

6.3 Editing Latitude, Longitude and UTC

Normally, position and time data should be supplied to the RS87 via a GPS or other navigational device connected to the radio. However, if this is not possible, the position and time can be entered manually -



Press **Shift** then **8 (Lat/Lon)**. The display will show “Enter Lat”.

Enter the Latitude using the numeric keypad (Fig 6.2). Use the **Call ◀** and **MSG ▶** keys to move the cursor to correct any errors. The cursor position is indicated by the number flashing. Enter a new number to overwrite the incorrect number.



Fig 6.2 - Manually entering position



The final digit specifies whether the Latitude is north or south of the Equator - press **VOL▲** or **VOL▼** to toggle between N and S.

Press **Ok** to confirm and move on to entering the Longitude - the display will show “Enter Long” - or **On/C** to abort entry.

Enter the Longitude using the numeric keypad. Use the **Call ◀** and **MSG ▶** keys to move the cursor to correct any errors. The cursor position is indicated by the number flashing. Enter a new number to overwrite the incorrect number.

The final digit specifies whether the Longitude is west or east of the Meridian - press **VOL▲** or **VOL▼** to toggle between W and E.



Press **Ok** to confirm and move on to entering the time - the display will show “Enter UTC” - or **On/C** to abort entry.

Enter the UTC time (formerly known as GMT) in 24hr format using the numeric keypad (Fig 6.3). Use the **Call◀** and **MSG▶** keys to move the cursor to correct any errors. The cursor position is indicated by the number flashing. Enter a new number to overwrite the incorrect number.

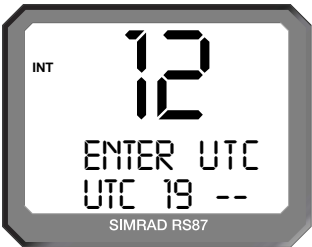


Fig 6.3 - Manually entering time (UTC)

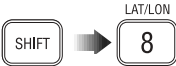


Press **Ok** to confirm all settings or **On/C** to abort entry.

This data is only stored temporarily and will be lost when the radio is switched off. Since the accuracy of this information is vital in the event of a Distress Alert transmission being necessary, we strongly recommend that a GPS or other navigational device is permanently interfaced with the radio. This data will then be automatically supplied and updated without the need for user intervention.

6.4 Toggling between Lat/Long and UTC views

If the Position View option (see section 3.3.2) is turned on, the current position will be displayed on the bottom two lines of the display.



The UTC time can be displayed instead by pressing **Shift** then holding the **8 (Lat/Lon)** key down for two seconds (Fig 6.4) -



Fig 6.4 - Displaying UTC time

Repeat the above key sequence to toggle between the Position and Time displays.

6.5 Intercom

If the system comprises of more than one station and/or includes intercom speaker/s, it is possible to make an intercom call to a selected position from a handset.

NOTE

This assumes that the installation comprises a full expanded RS87 system with four stations and two intercom speakers. The options shown will only be available if the relevant stations / intercoms are installed.



6.5.1 Making an intercom call

Press **Shift** then **6 (Intercom)** to enter Intercom mode. The display will show “Intercom Stn X - Stn Y”, where “X” is the I/D of the current station being used and “Y” is the first of the other stations in the system (Fig 6.5) -

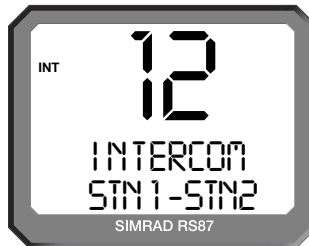


Fig 6.5 - Making an intercom call to station 2 from station 1



Press the **VOL▲** and **VOL▼** keys to scroll through the available stations / intercoms that can be called from the station -

“Stn 1-Stn 2”	Intercom call to Station 2
“Stn 1-Stn 3”	Intercom call to Station 3
“Stn 1-Stn 4”	Intercom call to Station 4
“Int Spkr 1”	Intercom call to Intercom speaker 1
“Int Spkr 2”	Intercom call to Intercom speaker 2
“All Spkrs”	Intercom call to all Station speakers
“P A”	Intercom call to all speakers in system (including horns)



Press the **PTT** key or **Ok** to activate the intercom or press **On/C** to cancel. Once the call has been initiated, further presses of the **Ok** key will re-sound the call alarm. Pressing the **PTT** key will open the audio path to the called station.

NOTE

The call will be terminated if it is not accepted within 15 secs.



If calling an Intercom speaker, pressing the **VOL▲** and **VOL▼** keys while the **PTT** key is held to adjust the Intercom speaker volume. This option is not available if calling another Station or making an All Speaker / PA call - the current volume settings for each position will be used.



To end the intercom call, press **On/C** or return the handset to its cradle.

NOTE

While making an intercom call, all other stations will display “Station X Occupied”.

NOTE

If the Interrupt Intercom option (section 3.3.4) is disabled and a VHF transmission is being received, the display will show “Signal Present” until the transmission has ended. If Interrupt Intercom is enabled, the intercom call will be interrupted if a VHF transmission is received.

6.5.2 Receiving an intercom call

If an intercom call is received from another station, the display will show “Intercom From Stn Y”, where “Y” is the I/D of the Station making the intercom call (Fig 6.6) -

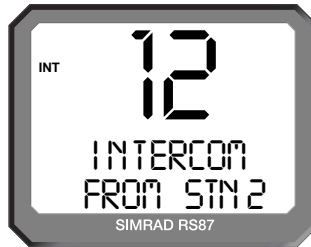


Fig 6.6 - Receiving an intercom call from station 2

If the other station is making an All Speakers call, the display will show “Int All From Stn Y”.

If the other station is making a PA call, the display will show “P A from Stn Y”.

To accept the call lift the handset from the cradle or press **On/C** to cancel the intercom call.



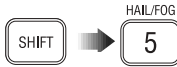
To end the intercom call, press **On/C** or return the handset to its cradle.

NOTE

All speaker and PA calls are announcement calls and therefore do not need to be accepted manually by the receiving stations.

6.6 Loudhailer / Foghorn

Up to two loudhailer / foghorns can be fitted to the RS87 - one Fore and one Aft.



To enter Hailer / Foghorn mode press **Shift** then **5** (**Hail/Fog**). The display will show “Loudhailer Fwd” (Fig 6.7) -



Fig 6.7 - Selecting Foghorn mode



To toggle between Loudhailer and Foghorn press the **5** key - the display will show “Foghorn Fwd”.

NOTE

If no hailers are connected to the radio the display will show “Horns not enabled”.



6.6.1 Loudhailer

To cycle through the loudhailer options press the **4** key -

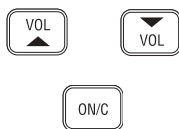
Loudhailer Fwd

Loudhailer Aft

Loudhailer Both

NOTE

If a single loudhailer is fitted, only the “Loudhailer Fwd” or “Loudhailer Aft” option will show, depending on where fitted.



Press the **PTT** key to make the loudhailer call. Press the **VOL▲** and **VOL▼** keys while the **PTT** is pressed to adjust the hailer volume.

Press **Ok** to open the talkback path, enabling users at the loudhailer to talk back.

Press the **On/C** key to exit Loudhailer /Foghorn mode.

NOTE

If Interrupt Intercom is disabled (see section 3.3.4) the display will show “Signal Present” if an incoming VHF transmission is being received.

5

6.6.2 Foghorn

To select Foghorn press the 5 key while in Loudhailer / Foghorn mode - the display shows "Foghorn Fwd" (Fig 6.8) -

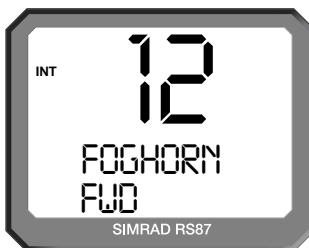


Fig 6.8 - Selecting Foghorn mode

4

To cycle through the foghorn options press the 4 key -

Foghorn Fwd
Foghorn Aft
Foghorn Both

NOTE

If a single loudhailer is fitted, only the "Foghorn Fwd" or "Foghorn Aft" option will show, depending on where fitted.



Press Ok to enter the Foghorn sub menu. Use the **VOL▲** and **VOL▼** keys to scroll through the available horn tone options -

Horn
Siren
Power Vessel Under Way
Power Vessel Stopped
Restricted Manoeuvre
Working at anchor
Vessel Being Towed
Vessel In Pilotage
Anchor
Aground



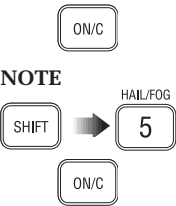
Press **PTT** or **Ok** to sound the horn. If an external horn button is fitted to the radio, pressing this will also sound the horn.

NOTE

For single activation options (eg Horn), it is necessary to press the activation button each time to sound the horn. For automatic repeat options (eg Anchor) it is only necessary to press the key once and the foghorn will sound automatically. Press **On/C** to cancel the automatic repeat sequence.



Adjusting horn volume - for single activation options press the **VOL▲** and **VOL▼** keys while the **PTT** is pressed. For automatic repeat options, press **VOL▲** and **VOL▼** while the display shows "Horn In Use". ctd -



Press the **On/C** key to exit Loudhailer /Foghorn mode.

Ten seconds after the automatic horn is sounded the unit will revert to normal radio operation, but the horn will continue to sound. To cancel, press **Shift** followed by **5 (Hail/Fog)**, then **On/C**.

6.7 Station speaker mute

The station speaker that is installed alongside the handset can be muted if required.



To mute the speaker, press **Shift** followed by **7 (Speaker)** on the specific handset that is used with the speaker.



To disable mute, press **Shift** followed by **7 (Speaker)** again, the **VOL▲** and **VOL▼** keys or lift the handset from the cradle. If the system is powered down, the speaker will be un-muted when the system is turned on again.

NOTE

This will only affect the speaker that is used with this specific handset - eg handset 1 will only mute the speaker connected to the Station 1 terminals. To mute any other speakers on the system it will be necessary to go to the relevant handset and select mute.

6.8 iDSC

The RS87 can be integrated with one of Simrad's navigational displays (33, 42 and 52 series) enabling details of any incoming DSC calls to be displayed on the unit. Refer to the instruction manual of the relevant unit for more details. Refer to section 7.2.5 for interfacing details.

7 INSTALLATION

7.1 Physical Installation

The RS87 is a modular system that is very simple to install, however the performance of the radio is directly affected by the quality of the installation. Please read these instructions thoroughly before attempting installation and if in any doubt, consult a qualified marine electronics engineer.

7.1.1 Transceiver Installation

The transceiver unit is designed to be installed in a concealed location such as in a locker or behind the switch panel.

CAUTION

The transceiver unit is not waterproof, therefore it must not be installed in any location where it is likely to be exposed to excess moisture (eg a wet locker or an outside locker).

The fins on the top of the transceiver act as a heatsink to dissipate heat generated by the set when in use, which maintains the high efficiency of the radio. The free circulation of air is essential - if mounting the transceiver in an enclosed space, ensure that the space is well ventilated

The transceiver requires a flat surface with an area of at least 170 x 245mm (6.8 x 9.8in) for mounting. Allow sufficient space beneath the unit to allow cable entry - at least 50mm (2.0in) is recommended. The surface should be rigid and sturdy enough to be able to support the weight of the unit, taking into account the shock loads likely to be encountered when the vessel is underway in heavy seas.

Fix the transceiver unit to the surface using the four self-tapping screws supplied. The four fixing points are at the corners of the transceiver unit -the bottom two are underneath the terminal cover (Fig 7.1) -

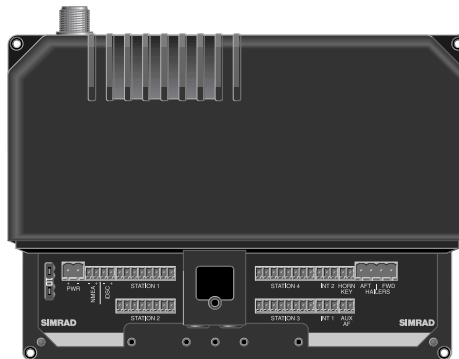


Fig 7.1 - Transceiver box mounting

7.1.2 Handset Installation

The handset should be sited so that engine noise and vibration or other background noise do not make it difficult for the operator to hear.

As microphones and loudspeakers contain powerful magnets, the handset and speakers should not be installed within 1m (3ft 3in) of any compasses, whether magnetic or electronic.

The handset is connected to a 5m (16.5ft) extension cable, therefore the handset should be fitted within reach of the transceiver box (for longer runs, 20m extension cables are also available as separate accessories - see section 8.6).

The handset cradle should be mounted on a flat surface with enough space to allow the bulkhead socket for the extension cable to be fitted alongside. Space should also be allowed nearby for the accompanying loudspeaker to be fitted.

NOTE

The handset and bulkhead socket are waterproof, but if the handset is to be fitted in an exposed location (for example on the flybridge of a power boat) it is recommended that the handset and especially the bulkhead socket is fitted to an angled or vertical surface to prevent standing water lying on the handset face or inside the bulkhead socket, which could corrode the pins.

Fit the supplied template for the handset cradle to the desired mounting location. Drill 4 x 3.2mm (0.125in) pilot holes in the indicated positions. If drilling into GRP, it is recommended that the holes are also countersunk to prevent the gelcoat splitting when the self-tapping screws are inserted.

Fit the supplied template to the desired mounting location for the bulkhead socket. Drill a 23.5mm (0.94in) hole and 4 x 2.4mm (0.1in) pilot holes. Again, the pilot holes should be countersunk if drilling into GRP.

Fit the bulkhead socket and run the cable to the transceiver box position.

NOTE

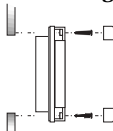
It is recommended that the cable is routed away from any other cables carrying high current (eg mains power cables) or pulsed signals (eg transducer cables) to avoid possible interference.

If the handset is being removed, the waterproof cover should always be fitted to the bulkhead socket to protect the pins from possible corrosion.

7.1.3 Station speaker Installation

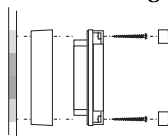
The loudspeaker should be installed near to the handset and can be flush mounted or surface mounted with the supplied pattress.

Flush Mounting



Attach the self adhesive gasket to the back of the loudspeaker. Remove the four detachable corners of the speaker which conceal the mounting holes. Apply the supplied cutting template to the mounting position. Carefully cut out the aperture required for the speaker back and use the short self tapping screws provided. Refit the corners to conceal the screw fixings.

Surface Mounting



Drill a 5mm (0.2in) hole for the speaker cable. Attach the self adhesive gasket to the back of the loudspeaker. Remove the four detachable corners which conceal the mounting holes. Fit the pattress to the back of the speaker and use the long self-tapping screws provided to fix the speaker and the pattress block to the bulkhead. Refit the corners to conceal the screw fixings.

7.2 Electronic Installation

Electronic installation is straightforward - all peripherals connect to the Transceiver Unit using the clearly labelled plug-in terminals (Fig 7.2) -

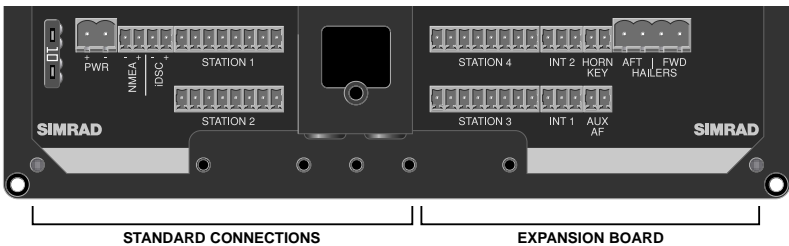


Fig 7.2 - Transceiver terminal connections

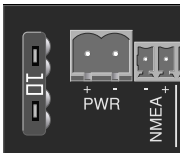
NOTE

The diagram shows the terminal bay with the optional expansion board, which is not included with the standard radio.

If it is necessary to shorten any of the cables, ensure the ends are re-tinned for the best quality connection.

The transceiver unit is fitted with a 10amp “blade” type fuse. It is recommended that the radio is connected to a 10amp fused switch or breaker on the boat’s switch panel.

Connect the supplied power cable to the terminals marked PWR + and - as follows -



Terminal Number	Wire Colour(s)
1	Red
2	Black

7.2.1 Control panel

A single cable links the control panel to the transceiver unit. The standard model can support up to two control stations, or up to four stations if the expansion board is fitted. One fixed station is supplied with the radio - additional stations are supplied as separate accessories. The control stations can be either a handset model which is supplied with a separate loudspeaker or a fixed control panel with a passive fistmike or handset.

Connect the main control station to the “Station 1” terminals on the transceiver unit as shown (Fig 7.3) -

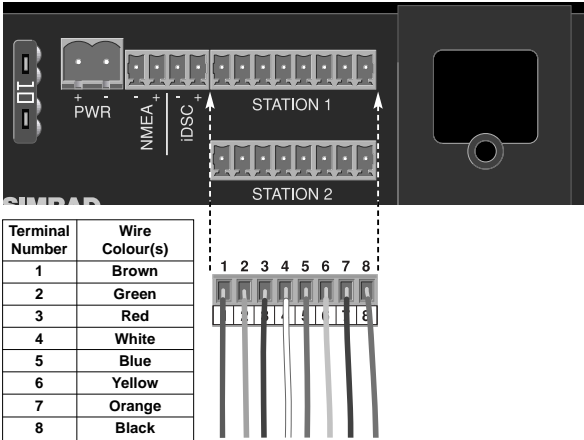


Fig 7.4 - Control panel terminal connections

Additional control stations should be wired in the same manner and connected to the “Station 2”, “Station 3*” and “Station 4*” terminals (Fig 7.5).

** Only available on models fitted with the expansion board*

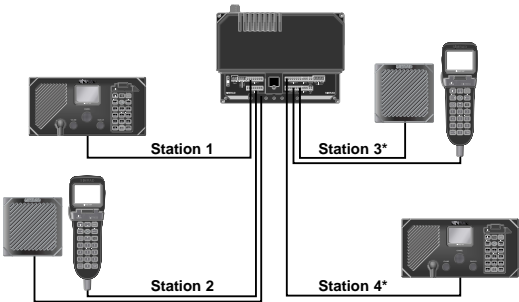


Fig 7.5 - Example of a typical multi-station installation

7.2.2 Loudspeakers

The RS87 can be fitted with Simrad LS80 station speakers or third party station speakers with an impedance of 4Ω.

Connect the station speaker to terminals 7 and 8 of a free Station terminal strip (Fig 7.6).

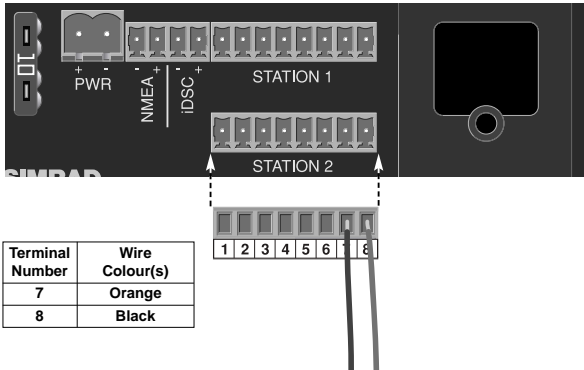


Fig 7.6 - Station loudspeaker terminal connections

7.2.3 Intercoms

NOTE Only available on units fitted with the expansion board.

The RS87 intercoms enable two-way onboard communication with the main stations but do not allow control or use of VHF or DSC functions. Intercoms are normally fitted in areas such as the engine room, galley or crew quarters. Up to two intercoms can be fitted to the RS87.

Connect the intercoms to the “Int 1” and “Int 2” terminals on the transceiver unit as shown (Fig 7.7) -

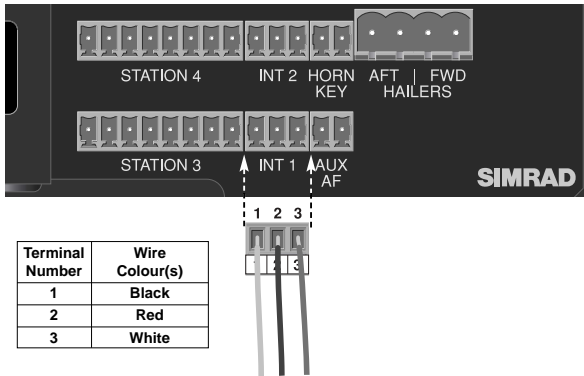


Fig 7.7 - Intercom terminal connections

NOTE

7.2.4 Loudhailer/Foghorns

Only available on units fitted with the expansion board.

Two separate loudhailer/foghorns can be fitted to the RS87 (normally one is mounted on the fore of the boat, the other aft).

Connect the loudhailers to the “Aft/Fwd Hailers” terminals on the transceiver unit as appropriate (Fig 7.8) -

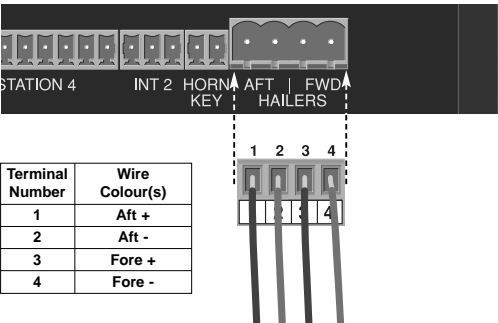


Fig 7.8 - Loudhailer terminal connections

WARNING

Do not connect any of these terminals to a common ground, otherwise the RS87 will be permanently damaged.

NOTE

7.2.5 Remote foghorn button

Only available on units fitted with the EHX80 expansion board.

A remote button can be used to activate the foghorn. Connect the remote button to the terminals marked “Horn Key” as shown (Fig 7.9) -

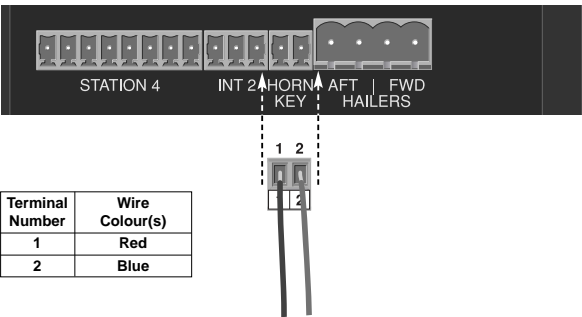


Fig 7.9 - Remote foghorn button terminal connections

NOTE

Apart from when transmitting, pressing this button will enable the foghorn to be sounded at any time, regardless of what mode the RS87 is currently in.

NOTE

7.2.6 Auxiliary audio input

Only available on units fitted with the EHX80 expansion board.

The expansion board upgrade on the RS87 allows an auxiliary audio input - for example from a radio receiver or an entertainment system - to be fed into the intercom / loudspeaker system.

The auxiliary input must be a line level signal (0.775V rms)

Connect the line out from the auxiliary source to the terminals marked “Aux AF” as shown (Fig 7.10) -

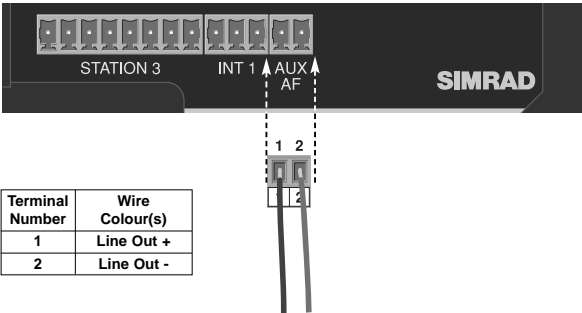


Fig 7.10 - Auxiliary audio input terminal connections

7.2.7 NMEA0183 input

The inbuilt NMEA0183 processor allows navigational position information to be received from a GPS or Chart Plotter. The boat's position is automatically transmitted when a Distress Alert is initiated.

NMEA input must be of the 0183 format, version 2.0 - 3.0, outputting sentences GLL, RMC and ZDA at a Baud rate of 4800.

The NMEA Out connections from the GPS/Plotter should be connected to the “NMEA In” terminals as shown (Fig 7.11) -

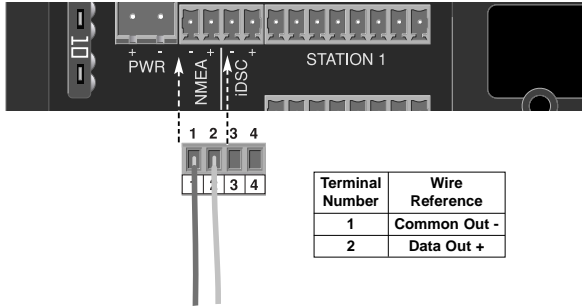


Fig 7.10 - Auxiliary audio input terminal connections

7.2.8 iDSC output

The RS87 is designed to integrate with other Simrad equipment which enables DSC call information to be displayed on the xx33, xx42 and xx52 series chartplotters.

Connect the iDSC input terminals of the chartplotter to the terminals marked “iDSC” as shown (Fig 7.11) -

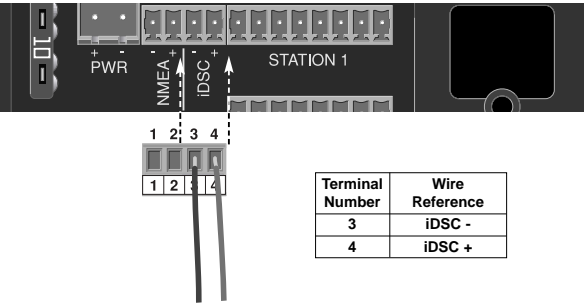


Fig 7.11 - iDSC output terminal connections

7.2.9 Future options

The two circular ports in the centre of the connection panel are reserved for future options (Fig 7.12) -

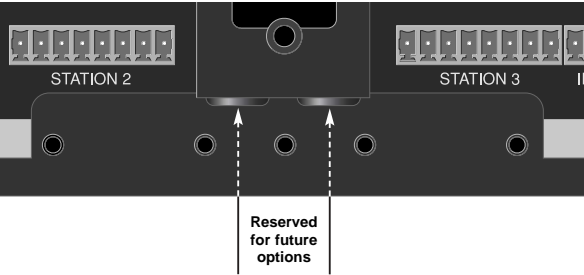
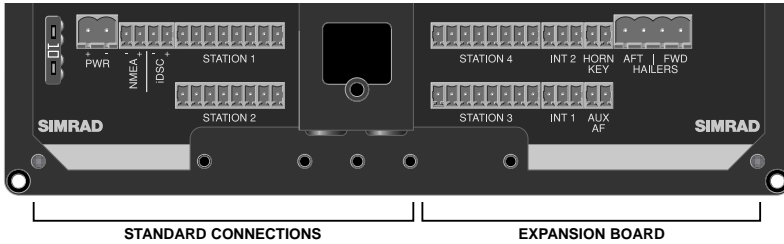


Fig 7.12 - Future options

Summary of the RS87 connections -



STANDARD CONNECTIONS

Station 1		Station 2		NMEA/iDSC		PWR	
Terminal Number	Wire Colour(s)	Terminal Number	Wire Colour(s)	Terminal Number	Wire Reference	Terminal Number	Wire Reference
1	Brown	1	Brown	1	Common Out -	+	Red (12v in)
2	Green	2	Green	2	Data Out +	-	Black (0v)
3	Red	3	Red	3	iDSC -		
4	White	4	White	4	iDSC +		
5	Blue	5	Blue				
6	Yellow	6	Yellow				
7	Orange	7	Orange				
8	Black	8	Black				

EXPANSION BOARD CONNECTIONS

Station 3		Station 4		Fog/Hailers		Intercoms (Int1/Int2)	
Terminal Number	Wire Colour(s)	Terminal Number	Wire Colour(s)	Terminal Number	Wire Colour(s)	Terminal Number	Wire Colour(s)
1	Brown	1	Brown	1	Aft +	1	Black
2	Green	2	Green	2	Aft -	2	Red
3	Red	3	Red	3	Fore +	3	White
4	White	4	White	4	Fore -		
5	Blue	5	Blue				
6	Yellow	6	Yellow				
7	Orange	7	Orange				
8	Black	8	Black				

Fig 7.13 - Transceiver unit connections summary

7.2.11 Cable strain relief

Once all the cables have been run to the appropriate peripherals and connected to the transceiver unit they should be secured to ensure that they are not snagged or exposed to excess strain.

Screw the strain relief tabs to the cable exit port on the transceiver unit using the screws supplied and secure the cables to the tabs using tie wraps as shown (Fig 7.14) -

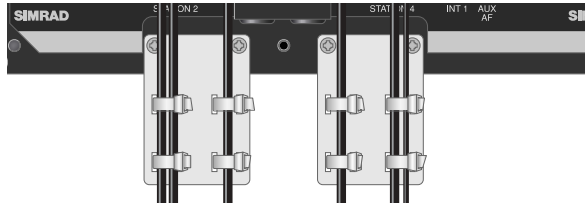


Fig 7.14 - Cable strain relief

Replace the terminal cover and secure by tightening the retaining screw.

7.3 Antenna installation

The most important factor in the performance of the radio will be the quality and positioning of the antenna. Most recorded problems with VHF radios are related to poor antenna siting, faulty cabling, poor quality cable joints and low voltage supply. Even a VHF as highly advanced as the RS87 cannot compensate for these factors. Therefore, if replacing an existing VHF installation, it is important that the antenna is thoroughly checked for any faults or damage before use.

As the range of VHF signals are governed by line of sight (see section 8.3), the antenna should be placed as high as possible, while remaining clear of any metallic objects that could influence the resonance of the antenna.

The most popular antennae for marine use are 1m (3ft 3in) long. On sail boats these are usually mounted on the mast-head, where the length of the antenna keeps it clear from the navigation lights and windvanes etc. This type of antenna can also be mounted on the cockpit roof or garage of power boats.

Longer whip antennae are recommended for larger boats - these radiate the same total power as smaller antennae, but concentrate it into a narrower beam, which is advantageous on a tall mast at extreme range where concentrating the available power into a narrow horizontal beam becomes more impor-

tant. However, if the antenna is not vertical when transmitting, the beam will be angled either too high or too low (Fig 7.15) -

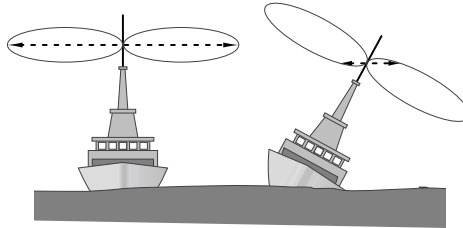


Fig 7.15 - Effect of heel on range of longer whip antenna

Here the wider beam of the shorter antenna will be more universally effective, although the signal will be weaker (Fig 7.16) -

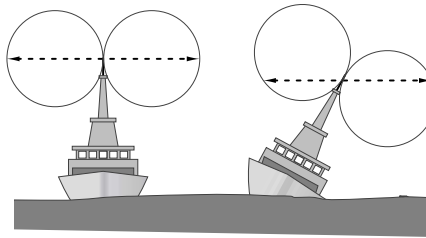


Fig 7.16 - Effect of heel on range of 1m marine antenna

Therefore vessels with a large heel angle (small sailboats) would be better choosing a short masthead antenna. Your local agent should be able to provide specific advice on antenna choice for the vessel it is to be fitted to.

WARNING

The antenna coaxial cable and any connectors used must be rated at 50Ω. *Under no circumstances should standard domestic TV cable and connectors be used.* Incorrectly rated cabling and connectors could result in power not reaching the antenna, but also power could be reflected back into the radio, damaging it in the process.

The quality of any connections and integrity of the cable (without breaks in the sheathing) will directly affect the performance of the radio. Poor soldering or corrosion of the terminals can impair performance. We recommend that screw or crimp terminal type connectors are not used for any through deck fittings - a good quality waterproof solder terminal connector will be less susceptible to poor connection due to corrosion of the contacts.

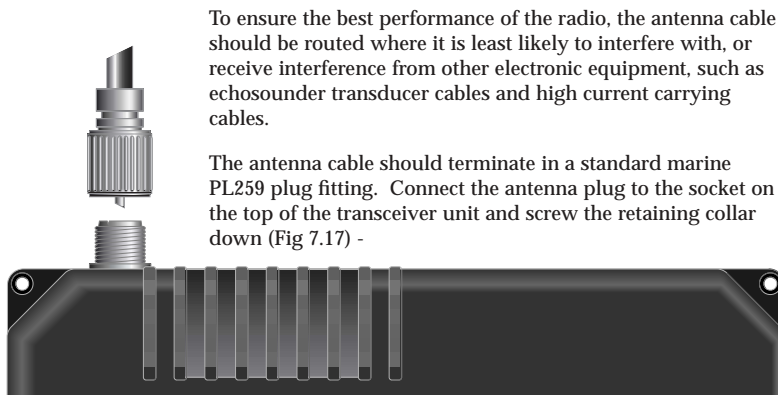


Fig 7.17 - VHF antenna connection

NOTE

To avoid possible water damage to the radio, it is recommended that the antenna cable is looped to provide a drip path.

7.4 Electrical interference suppression

Interference generated by the alternator of the engine may occasionally cause problems. The RS87 has been designed to minimise the effects of outside interference. However, precautions should still be taken - route the power supply and antenna cables away from the engine compartment. The cable run should not be down the same trunking as other cables carrying high current. The antenna cable should also be kept separate from the radio's power cable.

Engines with spark ignition - and also some refrigerators - should be fitted with suppressors. Your local agent should be able to give advice on this, and also supply suppression kits where necessary.

8 APPENDIX

8.1 Operating procedures

The following operating procedure summary has been proposed by the UK Maritime and Coastguard Agency. It is not exhaustive and should not be regarded as a replacement for information provided by the proper two day VHF/DSC training course required for all VHF license holders.

8.1.1 Sending a distress alert

1. Send a distress alert call (see section 2.7)
2. Wait approx 15 seconds for a DSC acknowledgement from the Coastguard or a ship station.
3. On receipt of a DSC acknowledgement or after about 15 seconds, transmit the Distress call on channel 16 -

“Mayday, Mayday, Mayday”

“This is (name of vessel repeated three times)”

“Mayday”

MMSI number and name of vessel or callsign, spoken once

Position

Nature of distress

If the vessel is not in “grave and imminent danger”, an All Ships Urgency call followed by a spoken “Pan Pan” call or a routine call to the nearest coastguard station may be more appropriate. It is a prosecutable offense to initiate a Distress Alert call for any other reason than that the vessel and/or crew is in imminent danger.

8.1.2 Acknowledging and relaying a distress alert

When a DSC distress alert is received, an audible alarm will sound. Immediately cease any transmission that may interfere with distress traffic and continue a watch on channel 16.

If there is no DSC acknowledgement from a coast station or ship, after a short interval acknowledge by voice on channel 16 -

“Mayday (MMSI of vessel in distress repeated three times)”

“This is (name of own vessel, repeated three times)”

“Received Mayday”

(State the assistance you can give).

A similar response should be given to a distress relay, using the words “Mayday Relay” instead of “Mayday”.

8.1.3 Cancelling a distress alert

If a DSC distress alert is sent accidentally, cancel it immediately on the RS87 by pressing the C button to prevent repeats, then make the following announcement on channel 16 -

“This is (*name of vessel, callsign, MMSI*)”

“Cancel DSC Alert sent (*date & time UTC*)”

Do not simply cancel the DSC alert without verbally cancelling it as well, otherwise the rescue authorities will not be aware that this is a false alarm.

8.1.4 Alerting all vessels within range

If the vessel is outside of coast radio range and needs to issue a safety warning to all vessels within radio range, transmit an All Ships Safety call by DSC. After about 15 seconds transmit on channel 16 the safety call and message as follows -

“Securité, Securité, Securité”

“All stations (or called station)” *repeated three times*

“This is (*MMSI and name or callsign of own vessel*)”

Repeat text of safety message.

8.1.5 Calling a coast radio station

Enter the MMSI of the station into the RS87, either manually or from the directory. When the call is acknowledged, the working channel for voice communication will be indicated and the RS87 will automatically switch to that channel. Make a voice call as normal.

8.1.6 Making an intership call

Enter the vessel's MMSI into the RS87, either manually or from the directory. Before sending the call, enter the inter-ship channel to be used for subsequent communication. When the alarm sounds on the called vessel, its operator should acknowledge by DSC, then respond by voice on the selected channel.

If the MMSI number of the vessel is not known, call as now on channel 16. If no response is received, call on channel 13. This is the GMDSS bridge to bridge communication channel.

8.2 NMEA sentences received

The following NMEA0183 sentences are processed by the RS87 in order to transmit the boat's position if a Distress Alert is initiated -

NMEA0183 version 2 and 3 - *GGA, GLL, RMC, ZDA*

8.3 Transmission range

Because VHF signals travel in a straight line and are not reflected back off the ionosphere as lower frequency signals are, the range of VHF signals is limited to 'line of sight', beyond which the other vessel passes behind the curve of the Earth. Therefore, the range will increase greatly the higher above sea level the antenna is, as Fig 8.1 illustrates (assuming maximum transmission power is used):

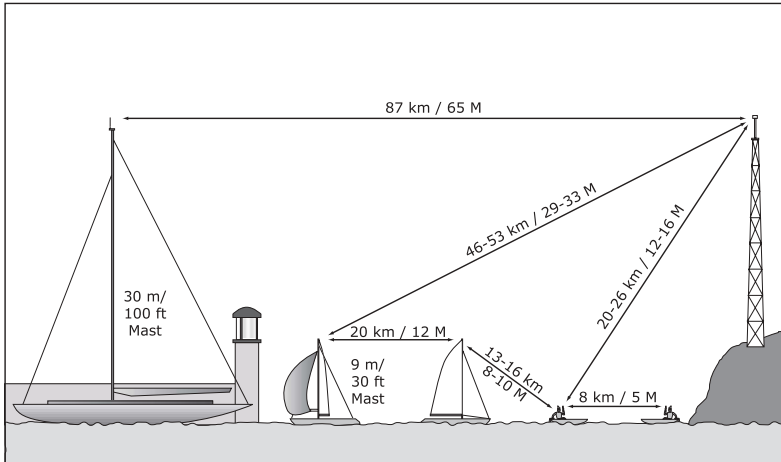


Fig 8.1 - VHF transmission range

Therefore, the typical ship to ship range of a fixed VHF radio such as the RS87 with a masthead antenna will be approximately 20 Km (12 miles). This will increase as height above sea level increases, or if the other radio user's antenna is at a greater height - note that the range between the yacht with the antenna mounted on a 9 M (30 Ft) mast and the shore station increases to 46-53 Km (29-33 Miles).

8.4 Frequency of channels

Channel Design- nators	Tx	INT Rx	USA Rx	Channel Design- nators	Tx	INT Rx	USA Rx
0	156.000	156.000	156.000				
60	156.025	160.625	156.025	17	156.850	156.850	156.850
01	156.050	160.650	156.050	77	156.875	156.875	156.875
61	156.075	160.675	156.075	18	156.900	161.500	156.900
02	156.100	160.700	156.100	78	156.925	161.525	156.925
62	156.125	160.725	156.125	19	156.950	161.550	156.950
03	156.150	160.750	156.150	79	156.975	161.575	156.975
63	156.175	160.775	156.175	20	157.000	161.600	161.600
04	156.200	160.800	156.200	80	157.025	161.625	157.025
64	156.225	160.825	156.225	21	157.050	161.650	157.050
05	156.250	160.850	156.250	81	157.075	161.675	157.075
65	156.275	160.875	156.275	22	157.100	161.700	157.100
06	156.300	156.300	156.300	82	157.125	161.725	157.125
66	156.325	160.925	156.325	23	157.150	161.750	157.150
07	156.350	160.950	156.350	83	157.175	161.775	157.175
67	156.375	156.375	156.375	24	157.200	161.800	161.800
08	156.400	156.400	156.400	84	157.225	161.825	161.825
68	156.425	156.425	156.425	25	157.250	161.850	161.850
09	156.450	156.450	156.450	85	157.275	161.875	161.875
69	156.475	156.475	156.475	26	157.300	161.900	161.900
10	156.500	156.500	156.500	86	157.325	161.925	161.925
70	156.525	156.525	156.525	27	157.350	161.950	161.950
11	156.550	156.550	156.550	87	157.375	157.375	157.375
71	156.575	156.575	156.575	28	157.400	162.000	162.000
12	156.600	156.600	156.600	88	157.425	157.425	157.425
72	156.625	156.625	156.625	29	-	-	157.450
13	156.650	156.650	156.650	89	-	-	157.475
73	156.675	156.675	156.675	WX01	-	-	162.550
14	156.700	156.700	156.700	WX02	-	-	162.400
74	156.725	156.725	156.725	WX03	-	-	162.475
15	156.750	156.750	156.750	WX04	-	-	162.425
75	-	156.775	156.775	WX05	-	-	162.450
16	156.800	156.800	156.800	WX06	-	-	162.500
76	-	156.825	156.825	WX07	-	-	162.525
				WX08	-	-	161.650
				WX09	-	-	161.775
				WX10	-	-	163.275

The following channels may be fitted to your radio. These are only licensed for use in the countries indicated. No attempt should be made to use them in any other country.

Designation	Tx	Rx	Country
M	157.850	157.850	UK
M2	161.425	161.425	UK
31	157.550	161.150	Holland/Belgium
96	162.425	162.425	Belgium
L1/1L	155.500	155.500	Scandinavia
L2/2L	155.525	155.525	Scandinavia
L3/3L	155.650	155.650	Scandinavia (not Denmark)
F1/1F	155.625	155.625	Scandinavia
F2/2F	155.775	155.775	Scandinavia
F3/3F	155.825	155.825	Scandinavia

NOTE

Ch 0 will only be made available in the UK to Coastguard users with written authorisation.

Channel 70 is the designated Digital Selected Calling (DSC) channel and may not be used for voice transmissions.

8.5 Fault finding

Symptom	Possible Cause	Remedy
Unit will not switch on	<ul style="list-style-type: none"> Faulty connection to power Fuse has blown Supply voltage above limit 	<ul style="list-style-type: none"> Check power connection Replace fuse and check power supply current Check supply voltage is less than 15.6v
Scan or Memory Scan is locking on a channel without a signal	<ul style="list-style-type: none"> Noise on the channel is holding the scan 	<ul style="list-style-type: none"> Increase squelch level Inhibit channel from scan (see section 2.11.1)
Dual Watch not being entered	<ul style="list-style-type: none"> Priority channel selected Handset off cradle 	<ul style="list-style-type: none"> Select a working channel Replace handset
Cannot change channel	<ul style="list-style-type: none"> Dual Watch (D/W) engaged 	<ul style="list-style-type: none"> Exit Dual Watch
Certain channels are not obtainable	<ul style="list-style-type: none"> Some channels are restricted and not programmed depending on country of purchase 	<ul style="list-style-type: none"> Consult your national authority for permitted channels in your region
Will not transmit	<ul style="list-style-type: none"> Scanning or D/W function active 	<ul style="list-style-type: none"> Exit D/W or Scan
Will not transmit on 25W but OK on 1W	<ul style="list-style-type: none"> Low voltage when full transmitting current is drawn Some channels are restricted to low power transmission only 	<ul style="list-style-type: none"> Check power supply Consult your national authority
Transmissions persistently weak/display flashes ANT	<ul style="list-style-type: none"> Damaged antenna Antenna cable broken Poor contact 	<ul style="list-style-type: none"> Replace antenna Replace cable Check antenna sockets & through deck connector

These simple checks should be carried out before seeking technical assistance and may save time and expense. Before contacting your servicing agent please obtain the radio's serial number. The software iteration should also be quoted - this is shown in the large digits on the display for 2 seconds after the radio is turned on and should be written in the box below for future reference.

8.6 Optional Accessories

The following accessories are available from your nearest Simrad Technical Dealer. Please quote the correct part number when ordering.



AHK87
Active Handset Kit
(includes 20m cable)



PCK86:F or PCK86:H
Fixed control panel
(Available with fistmike or telephone handset)



LS80
Loudspeaker



LS81
Intercom Speaker



5.6 Technical specification

Power Supply	12v DC (10.8v - 15.5v DC)
Channel Capability	55 international channels
	1-28, 60-88 simplex & semi-duplex
	UK : includes M (previously 37) and M2
	USA : Wx1-10 receive only.
	Scandinavia : leisure or fishing channels as appropriate.
	Canada : Canadian and USA channels.
Private Channels	Up to 18 private channels*
External Speaker Impedance	4Ω
* Contact local Simrad Technical Dealer for further details of channel programming etc.	

Transmit

Frequency Range	155-163Mhz
Power Output	1 watt or 25 watts
Current Consumption	5.5A (25 watts), 1.3A (1 watt)
Harmonic and Spurious Emissions	< 0.25μW
Hum / Noise	< -40dB
Modulation	±5kHz

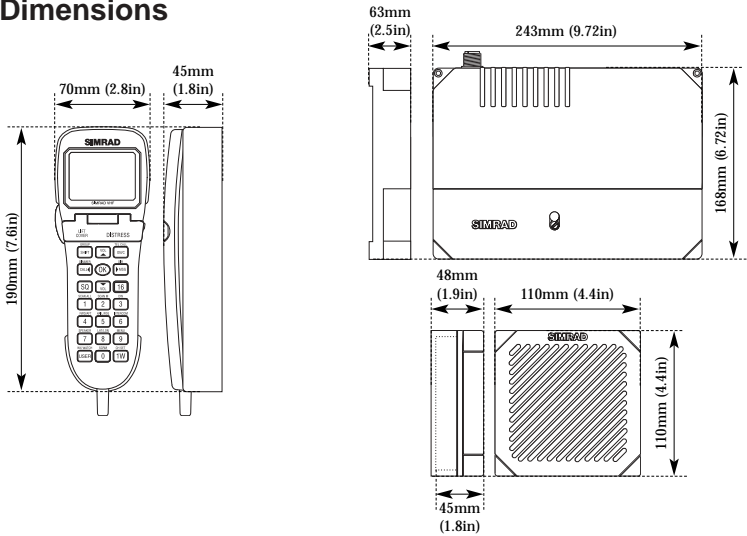
Receive

Audio Output Power	2 watts
Current Consumption	600mA (Full Volume, illumination on)
	220mA (Fully Squelched, illumination off)
Sensitivity	< 1μV emf for 20 dB SINAD
Harmonic and Spurious Emissions	< -2nW
Hum / Noise	< -40dB
Adjacent Channel Selectivity	70dB
Intermodulation Rejection	70dB

Environmental

Telephone Handset & Loudspeakers	Waterproof to IP67
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5.7 Dimensions



5.8 Declaration of Conformity



English

Hereby, **Simrad Limited (Margate)**, declares that this **RS87 VHF Radio** is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.



Finnish

Simrad Limited (Margate) vakuuttaa täten että **RS87 VHF Radio** tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.



Dutch

Hierbij verklaart **Simrad Limited (Margate)** dat het toestel **RS87 VHF Radio** in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG



French

Par la présente, **Simrad Limited (Margate)** déclare que ce **RS87 VHF Radio** est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables



Swedish

Härmed intygar **Simrad Limited (Margate)** att denna **RS87 VHF Radio** står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.



Danish

Undertegnede **Simrad Limited (Margate)** erklærer herved, at følgende udstyr **RS87 VHF Radio** overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF



German

Hiermit erklärt **Simrad Limited (Margate)**, dass sich dieses **RS87 VHF Radio** in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMW i)



Greek

Με την παρούσα **Simrad Limited (Margate)** δηλώνει ότι **RS87 VHF Radio** συμμορφώνεται προς τις ουσιώδεις απαιτήσεις και τις λοιπές σχετικές διατάξεις της οδηγίας 1999/5/EK



Italian

Con la presente **Simrad Limited (Margate)** dichiara che questo **RS87 VHF Radio** è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.



Spanish

Por medio de la presente **Simrad Limited (Margate)** declara que el **RS87 VHF Radio** cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE



Portuguese

Simrad Limited (Margate) declara que este **RS87 VHF Radio** está conforme com os requisitos essenciais e outras provisões da Directiva 1999/5/CE.

Website - www.simrad.com



5.9 Service & warranty

Your radio should seldom need servicing, although it will benefit from an application of silicone or Teflon grease to the antenna and mic sockets each season. The equipment should be regularly checked by making routine calls to other stations. On an annual basis, test the Distress Alert button by pressing it ONCE. This will display the Distress Alert screen and ensure that the button is functioning. Press **On/C** to return to the main screen - **DO NOT HOLD DOWN THE DISTRESS BUTTON.**

The unit is guaranteed for 2 years from date of retail sale. If it is necessary to have the unit repaired, return it carriage prepaid to the agent in the country of purchase with a copy of the receipted invoice showing the date of purchase. Where possible, return all the components unless you are certain that you have located the source of the fault. If the original box is not available, ensure that it is well cushioned in packing; the rigours of freight handling can be very different from the loads encountered in the marine environment for which the unit is designed.

For Worldwide Warranty details, please refer to the Warranty Card supplied with this unit.



www.simrad.com

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