COBHAM

SAILOR 6248 VHF

User manual

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User manual

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Any attempt to install or execute software not supplied by Cobham SATCOM on this device will result in the warranty being void. Any attempt to modify the software on this device in a way not specified by Cobham SATCOM will result in the warranty being void.

Safety warning

The following general safety precautions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the equipment. Thrane & Thrane assumes no liability for the customer's failure to comply with these requirements.

Ground the equipment

To minimise shock hazard, the SAILOR 6248 VHF unit must be connected to an electrical ground and the cable instructions must be followed.

RF exposure hazards and instructions

Your Thrane & Thrane radio set generates electromagnetic RF (radio frequency) energy when transmitting. To ensure that you and those around you are not exposed to excessive amounts of energy and thus to avoid health hazards from excessive exposure to RF energy, all persons must be at least 200 cm away from the antenna when the radio is transmitting.

Warranty limitation

IMPORTANT - The radio is a sealed waterproof unit (classified IPX8). To create and maintain its waterproof integrity it was assembled in a controlled environment using special equipment. The radio is not a user maintainable unit, and under no circumstances should the unit be opened except by authorized personnel. Unauthorized opening of the unit will invalidate the warranty.

Installation and service

Installation and general service must be done by skilled service personnel.

Compass safe distance

Minimum safety distance: 0.85 m from the SAILOR 6248 VHF.

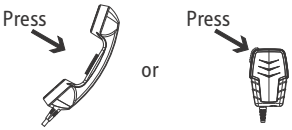
Alerte de sécurité

Dangers liés à l'exposition aux fréquences radio et instructions

Conformément à la réglementation d'Industrie Canada, le présent radio émetteur ne peut fonctionner qu'avec une antenne de type omnidirectionnelle, demi-onde ou d'un gain maximal de 4 dB, approuvée par Industrie Canada. Pour éviter les risques pour la santé dûs à une exposition excessive aux champs de fréquences radio, une distance minimale de 200 cm est nécessaire entre l'utilisateur et le radio-émetteur.

Emergency calls

Make sure your VHF Radio is on CH16



Use the HANDSET or SPEAKER MICROPHONE for voice calling

MAYDAY-MAYDAY-MAYDAY
This is
NAME-NAME-NAME

CALLSIGN
or other IDENTIFICATION

OWN ID

SHIP's NAME: _ _ _ _ _ _ _ _ _ _ _

CALLSIGN: _ _ _ _ _ _ _ _ _ _ _

MAYDAY
NAME of the VESSEL in distress
CALLSIGN or other IDENTIFICATION

POSITION
given as latitude and longitude
or
If latitude and longitude are not known
or if time is insufficient,
in relation to a known geographical location
NATURE of distress
Kind of ASSISTANCE required
Any other useful INFORMATION

99-133789

Preface

Radio for occupational use

The SAILOR 6248 VHF fulfils the requirements of SOLAS and is intended for use in maritime environment.

SAILOR 6248 VHF is designed for *occupational use only* and must be operated by licensed personnel only.

SAILOR 6248 VHF is not intended for use in an uncontrolled environment by general public.

SAILOR 6248 VHF is designed for installation by a skilled service person.

Training information

The SAILOR 6248 VHF is designed for *occupational use only* and is also classified as such. It must be operated by licensed personnel only. It must only be used in the course of employment by individuals aware of both the hazards as well as the way to minimize those hazards

The radio is thus NOT intended for use in an uncontrolled environment by general public. The SAILOR 6248 VHF complies with the FCC RF exposure limits for *Occupational Use Only*. The radio also complies with the following guidelines and standards regarding RF energy and electromagnetic energy levels including the recommended levels for human exposure:

- FCC OET Bulletin 65 Supplement C, evaluating compliance with FCC guidelines for human exposure to radio frequency electromagnetic fields.
- American National Standards Institute (C95.1) IEEE standard for safety levels with respect to human exposure to radio frequency electromagnetic fields, 3 kHz to 300 GHz
- American National Standards Institute (C95.3) IEEE recommended practice for the measurement of potentially hazardous electromagnetic fields - RF and microwaves.

Below the RF exposure hazards and instructions in safe operation of the radio within the FCC RF exposure limits established for it are described.

Warning

Your Thrane & Thrane radio set generates electromagnetic RF (radio frequency) energy when it is transmitting. To ensure that you and those around you are not exposed to excessive amounts of that energy (beyond FCC allowable limits for occupational use) and thus to avoid health hazards from excessive exposure to RF energy, FCC OET bulletin 65 establishes an Maximum Permissible Exposure (MPE) radius of 200 cm for the maximum power of your radio (25W selected) with an half wave omni-directional antenna having a maximum gain of 4 dB. This means all persons must be at least 200 cm away from the antenna when the radio is transmitting.

Installation

1. An omni-directional antenna with a maximum power gain of 4 dB must be mounted at least 400 cm above the highest deck where people may be staying during radio transmissions. The distance is to be measured vertically from the lowest point of the antenna. This provides the minimum separation distance which is in compliance with RF exposure requirements and is based on the MPE radius of 200 cm plus the 200 cm height of an adult.
2. On vessels that cannot fulfil requirements in item 1, the antenna must be mounted so that its lowest point is at least 3 ft. (0.9m) vertically above the heads of people on deck and all persons must be outside the 200 cm MPE radius during radio transmission.
    - Always mount the antenna at least 200 cm from possible human access.
    - Never touch the antenna when transmitting
    - Use only authorized T&T accessories.
3. If the antenna has to be placed in public areas or near people with no awareness of the radio transmission, the antenna must be placed at a distance not less than 200 cm from possible human access.

Failure to observe any of these warnings may cause you or other people to exceed FCC RF exposure limits or create other dangerous conditions.

Manual overview

This manual has the following chapters and appendices:

- *Introduction* contains a description of the VHF radio.
- *Operation* explains how to make and receive voice calls over VHF, including how to use and set-up scanning, watch and replay.
- *Service & maintenance* contains support information including lists of accessories and a troubleshooting guide.
- Appendix with *Specifications* and *Maritime channels*.

Important

All installation information and instructions are not covered in this manual. Please download the **SAILOR 6248 VHF Installation manual** at

http://sync.cobham.com/satcom/products/marine.

In the installation manual you can read how to mount the VHF radio and how to connect accessories and external equipment, including detailed system configuration examples with cable specifications.

Related documents

Title and description	Document number
SAILOR 6248 VHF, Installation guide	98-132282
SAILOR 6248 VHF, Installation manual (download only)	98-133233
Emergency call sheet	98-133795

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Introduction

VHF radio

SAILOR 6248 VHF is approved to Radio Equipment Directive (RED) and is waterproof to the IPx8 and IPx6 standard. As part of the required safety equipment, use the SAILOR 6248 VHF in an emergency situation. However the best way to guarantee functionality in an emergency situation, is to use the radio in daily communication on board.

The VHF radio is a simplex/semi duplex VHF radio. It is designed with an easy-to-use menu-driven setup. You use the soft keys and the keypad to enter the desired functions, you browse and select a setting using the right selection knob. The large display can be customized for optimum readability and visibility both day and night with several color themes.

The VHF radio can replay the last 240 s of received voice messages. This is a useful feature to minimize misunderstandings and to record messages when the radio is unattended.

With SAILOR connection boxes the VHF radio connects easily to external equipment like additional handsets, water proof hand microphones, control speaker microphone or external speaker. The Ethernet interface enables the VHF radio to be connected to ThraneLINK for service updates.

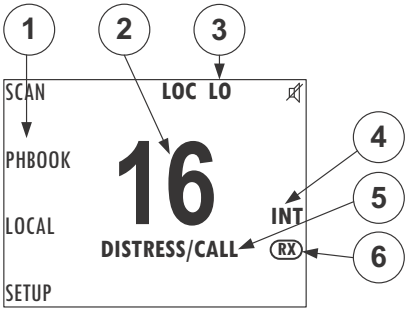
For a list of accessories available for the VHF radio see *Accessories available* on page 4 and check with your nearest distributor.

Controls on the front plate

1. Loudspeaker.
2. Four soft keys with function title in the display.
3. Large display.
4. Keys 0 to 9 to enter numbers or text.
5. **DW** button to toggle the watch function (dual or triple).
6. **16/C** quick selection key for channel 16 and the programmed call channel.
7. Connector for Handset or Handmicrophone. If not used, put the cap from the ACC connector on the front connector to prevent water ingress.
8. Squelch control to mute background noise.
9. Volume knob with key-press function for volume control and power on/off.
10. Selector and dim knob with key-press function for general operation, display color selection and dimming.
11. **1W** button to toggle between high and low power.
12. Replay button to play back up to 240 s voice message.

SAILOR 6248 VHF display

The picture shows the display after start-up. The display holds various fields of information, depending on the currently selected function.



1. Functions you can select with the soft keys.
2. Current working channel.
3. **System property icons** with information relevant for the currently selected functions.
4. Channel properties next to the currently selected VHF channel (if any).
5. **Service line** containing current temporary information relevant for the current channel or function.
6. Current state: RX or TX.

For a detailed description of the information shown for each of the functions available see the chapter *Operation* on page 7.

Accessories available

Accessory	Description
SAILOR 6201 Handset with cradle (additional)	One SAILOR 6201 Handset with cradle is included in the delivery of the SAILOR 6248 VHF. You can connect another SAILOR 6201 Handset with cradle. 
SAILOR 6203 Handset with cradle	SAILOR 6203 Handset with cradle, waterproof to IPx6. 
SAILOR 6202 Hand Microphone	You can use the SAILOR 6202 Hand Microphone (waterproof to IPx6 and IPx8) instead of the handset. 
SAILOR 6204 Control Speaker Microphone	With the SAILOR 6204 Control Speaker Microphone you can control the VHF voice functions of the SAILOR 6248 VHF. 
SAILOR 6207 Connection Box for parallel Handsets	The SAILOR 6207 Connection Box for parallel Handsets including Connection Cable 406209-941 is used for easy installation of several SAILOR 6201/SAILOR 6203 Handsets. 
SAILOR 6208 Control Unit Connection Box	SAILOR 6208 Control Unit Connection Box including Connection Cable 406208-941 is used for easy installation of external equipment and accessories:  • Max. 4 SAILOR 6204 Control Speaker Microphones • VDR • SAILOR 6270 External Loudspeaker

Accessory	Description
Connection cables	**5m connection cable for bulkhead mount**: Use this cable in installations where the SAILOR 6201 Handset with cradle or SAILOR 6203 Handset with cradle is not connected directly to the SAILOR 6248 VHF, but located in a different position (part number: 406204-940). **5m Connection cable**, **1x10 pole**: Use this cable in installations when connecting external equipment to the SAILOR 6248 VHF. This cable is included in the SAILOR 6207 Connection Box for parallel Handsets (part number: 406207-941). **5 m Connection cable for** SAILOR 6204 Control Speaker Microphone, **1x12 pole** (part number: 406204-940).
SAILOR 6270 External Loudspeaker	If you need an additional external loudspeaker you can connect a SAILOR 6270 External Loudspeaker. It provides 6 W output power. 
SAILOR 6197 Ethernet Switch	The SAILOR 6197 Ethernet Switch is used in installations with ThraneLINK. The Ethernet switch has 5 ports. 
SAILOR 6090 Power Converter 24 V to 12 V DC	The SAILOR 6090 Power Converter is used to provide 12 V DC for the SAILOR 6248 VHF from a 24 V DC power source. 

System configuration — example

The SAILOR 6248 VHF can be customized to suit your installation. The following illustration is one example of a system. For further configuration examples see the installation manual, Appendix B, *System configurations*.

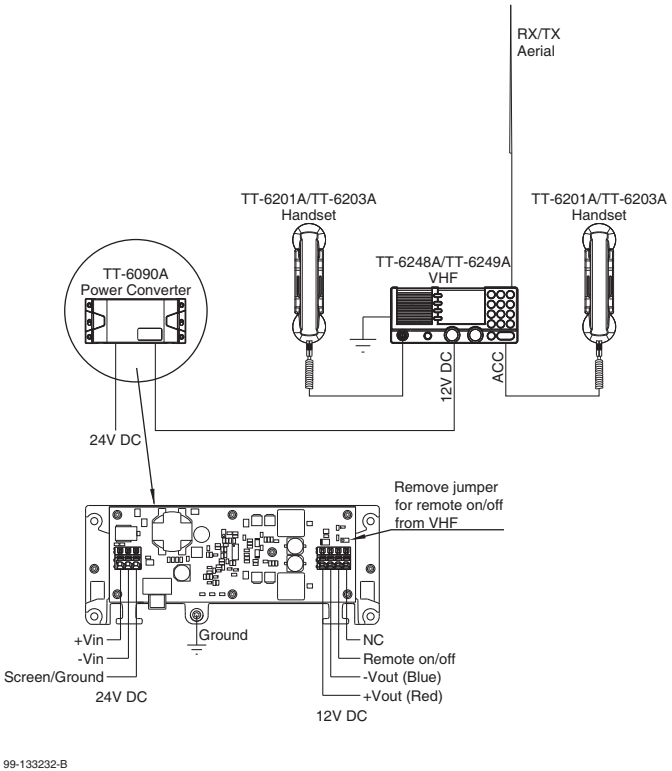


Figure 1: System configuration, example

Operation

Note Before using the VHF radio make sure that the VHF , power cable and other external equipment are connected properly. For installation instructions see the *SAILOR 6248 VHF, Installation manual (download only)*.

Overview

In this chapter you find detailed instructions and guidelines for:

- *General use and navigation*
- *VHF radio communication*
- *Watch*
- *Scan*
- *Phone book*
- *Replay function*
- *Setup*

General use and navigation

Power on and volume in handset and speaker

The VHF radio has a dual-function on/off knob for power on/off and volume control.

To power on the VHF radio press the on/off knob.

To power off the VHF radio, press and hold the on/off knob and follow the instructions in the display.

To adjust the speaker volume, turn the volume knob (clockwise = louder, counter clockwise = softer, until muted). When muted,  is shown in the display.

To adjust the volume of the handset earpiece see *Radio setup* on page 19.

Working channel and changing settings

Use the **selector knob** to browse and select:

- To browse and select **settings**, turn the selector knob and press for accept.
- To select a **working channel** use the selector knob or enter the channel number using the keypad. You can change channels whenever the channel designator is displayed.

Note A single, short press on the **16/C** key always brings you to **channel 16**, the international calling and distress channel, no matter what state the radio is in.

Speaker devices

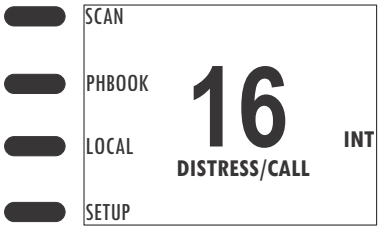
The VHF radio can be equipped with the following speaker devices:

- SAILOR 6201/SAILOR 6203 Handset with cradle and PTT (Push To Talk) button.
- SAILOR 6202 Hand Microphone with PTT button.
- SAILOR 6204 Control Speaker Microphone with PTT button.

See *Controller setup* on page 23 for controlling the connected speaker devices.

Soft-key functions

A number of functions of the SAILOR 6248 VHF are accessed and set using the four soft keys to the left of the display. The current function of a soft key is shown in the display next to the soft key.



The following soft-key functions are available from top-level standby:

Soft key	Function
SCAN	Scanning menu with start, stop and tag function
PHBOOK	Phone book
LOCAL	Local mode, 10 dB attenuation
SETUP	Setup pages for *Radio setup*, *Channel setup*, *Power Supply*, *System setup* and *Controller setup*.

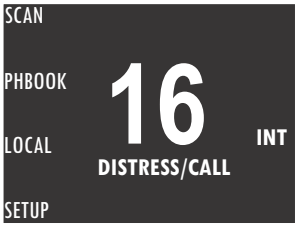
Changing the display light, night view

Red text on black background is available for optimal night vision.

To **dim the display backlight**, e.g. to give comfortable night vision, press, hold and turn the selector knob anti-clockwise. The display shows a brightness bar. At the brightness value 45 the display changes to **night view** with red text on black background.

To return to day vision press, hold and turn the selector knob clockwise until the display changes and it reaches the desired brightness.

The radio has two colour themes: Black text on a white background (default) or white text on black background. To change the **color theme** see *System setup* on page 22.



Alternative colour scheme

Adjusting the squelch level

With the Squelch control you can manually adjust and suppress noise in order to optimize the quality of the received radio communication.

When hearing noise or an unwanted signal, turn the squelch button clockwise until the speaker is muted.

Use with a SAILOR 6204 Control Speaker Microphone

When a SAILOR 6204 Control Speaker Microphone is connected to the radio, you can operate the radio with the Control Speaker Microphone. An occupied message is shown in the radio's display. At any time you can take control over the Control Speaker Microphone by pressing any key on the radio.

VHF radio communication

Basic VHF operation

You can make VHF calls using the Handset or another speaker device.

Note A single, short press on the **16/C** key always brings you to **channel 16**, the international calling and distress channel, no matter what state the radio is in.

Quick guide to radio telephone calls

1. Press the **PTT** button on the speaker device. When the TX indicator lights up in the display, the transmission is active.

2. To enable reception of a radio signal release the **PTT** button.

Note Press **PTT** only when you are talking. Always say "Over." just before releasing the PTT button.

One transmission is limited to **5 minutes** duration.

Receiving a radio telephone call on channel 16

When you hear your call name in the loudspeaker, proceed as follows:

1. The symbol **RX** shows that the radio is receiving on the channel displayed.
2. Lift the Handset or take another speaker device.
3. Press the **PTT** button. The symbol **TX** shows that the radio is transmitting on the channel displayed.
4. Repeat the name of the station calling you and say: "This is [your ship's name]".
5. Suggest a working channel other than 16 by saying: "Channel [suggested channel number]".
6. Say: "Over." and release the **PTT** button to allow the caller to confirm the suggested new channel.

7. Switch to the new channel using the keypad or by turning the selector knob to the agreed channel and begin your conversation. Press **PTT** only when you are talking.

Making a radio telephone call on channel 16

To make a radio telephone call, proceed as follows:

1. Select channel 16.
2. Lift the Handset or take another speaker device.
3. Press the **PTT** button. The symbol **TX** shows that the VHF radio is transmitting on the working channel displayed.
4. Say the name of the station you are calling three times.
5. Say: "This is [your ship's name]".
6. Say: "Over." and release the **PTT** button to listen. The symbol **RX** shows that the radio is receiving on the working channel displayed
7. When answered, agree upon a working channel other than 16.
8. Switch to the new channel by entering the channel number to the agreed channel and begin your conversation.

VHF channels

You can change channels whenever the channel designator is displayed. Enter the channel using the keypad or turn the selector knob to browse through all channels that are available in the selected channel table. Only valid channel numbers are accepted. When browsing channels they appear in the display in the following order:

- Primary channels
- Weather channels (if any)
- Private channels (if any)

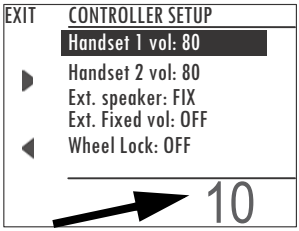
With a long press on the **16/C** key the radio changes to the call channel (channel 16 for the channel tables INT and BI, and channel 9 for the channel tables US and CA, if no other channel is programmed in *Channel setup* on page 21).

VHF channel table	Description
Primary channels (no prefix)	For details see *Maritime channels* on page 37. For instructions how to change a channel table see *Channel setup* on page 21.
Weather (WX)	Weather channels have the prefix **W**. (For US and CA channels only.)
Private (PRIV)	Up to 100 user-defined private channels.

For more information on how to setup channels setup see *Channel setup* on page 21. Contact your local dealer if you are interested in having private channels.

Channel information always available in the display

For some functions and for setup pages, the channel and radio information has moved to the bottom section of the display. You can change channels whenever the channel designator is displayed.



(Example)

The channel number displayed in this section always reflects the communication channel on which the radio is tuned into for communication. If **PTT** is pressed the radio transmits on the displayed channel. If a signal is received, it is received on the displayed channel.

Reduced transmission power LO

Press the key **1W** to toggle the transmit power between low (1 W, **LO** is displayed) and high (25 W).

Local mode, 10 dB attenuation

Press the soft key **LOCAL** to add 10 dB attenuation.

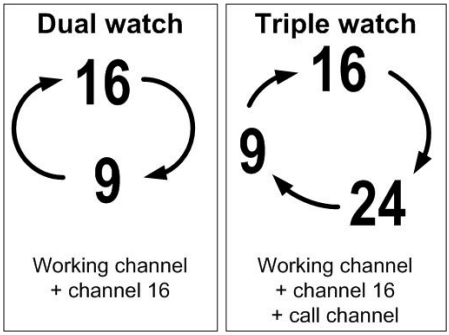
Note Local mode is automatically exited when selecting channel 16 by pressing **16/C** button. If you want to use attenuation on channel 16 or a call channel, you must set it manually each time.

US channels: Overriding LOW power for channels 13 and 67

When running in US mode you can override low power on the alternative call channels 13 and 67. Do as follows:

1. With the VHF radio set to 13 and 67, press **PTT** on the speaking device.
2. Press the soft key **OVRIDE** to transmit with full power.
   When you release the **PTT** button, the transmission power goes back to low.

Watch



The SAILOR 6248 VHF radio has a watch function with dual or triple watch. In dual watch, the working channel and channel 16 are watched. In triple watch the working channel, channel 16 and the programmed call channel are watched. You can select the working channel in any watch mode by turning the selector knob. If there is a signal in one of the watched channels, the display shows the channel in which the signal is received. For instructions how to setup **TRIPLE WATCH** see *Radio setup* on page 19.

To start the watch function press the key **DW**.The radio enters the watch mode and the text WATCH with the channel numbers watched is shown below the current channel number.

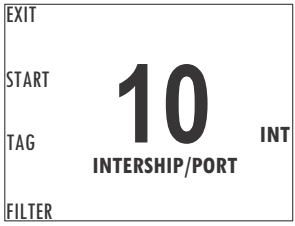
To stop the watch function press the key **DW** again or **PTT** on the speaking device.

Scan

The radio has a scanning function for tagged voice channels. Any available voice channel, including weather and private channels, can be tagged and added to the scanning sequence. As default the radio scans with priority scanning of channel 16. If a signal is received while in any scanning mode, only channel 16 continues to be watched.

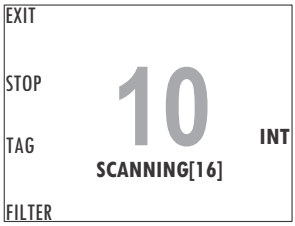
If there is a signal in one of the scanned channels, the display shows the channel in which the signal is received. If PTT is pressed while scanning, the scanning stops, the radio is tuned into the displayed channel and transmission starts immediately on the displayed working channel.

To start scanning press the soft key **SCAN**. The SCAN menu is shown. Press **START** to start scanning. To leave the SCAN menu, but not the scanning procedure, press **EXIT**.



To stop scanning press **STOP**, **QUIT** if not in the SCAN menu, or press **PTT** on the speaking device.

To tag a channel for scanning turn the selector knob until the wanted channel is in the display. Then press the soft key **TAG**. The display shows the channel number and the word **TAG** at the right side of the display.



To remove a channel from the scanning sequence turn the selector knob until the tagged channel is displayed. Then press the soft key **TAG** to remove the tag.

To see only tagged channels press the soft key **FILTER** and turn the selector knob. Press the soft key **FILTER** to leave the FILTER function. For details how to set up the scanning function see *Radio setup* on page 19.

Note The displayed working channel is temporarily included in the scanning list (although no TAG icon is shown).

Phone book

You can enter up to 200 contacts. A contact has the following details:

- Name (up to 12 characters)
- Type (SHIP, GROUP or COAST STATION)
- Channel

The phone book is always sorted alphabetically by contact names. Use the soft key **FILTER** to toggle between CONTACTS - ALL, COAST, SHIP or GROUP.

Use the phone book to switch to the preferred channel for a particular contact. Select the contact to display details and select **USE**. The channel is selected and the phone book closes automatically.

Adding a contact to the phone book

To add a contact to the phone book do as follows:

1. Press the soft key **PHBOOK**.
2. Press the soft key **ADD** and fill in the details for the new contact.

Contact	Description
NAME	Enter the name by turning the selector knob to the desired letter, press the selector knob to accept the letter and advance to the next letter. To finish press the soft key **OK**. It is also possible to use the keypad to enter the name.
TYPE	Press and turn the selector knob to select SHIP, GROUP or COAST STATION.
Ch (optional)	Press and turn the selector knob to select the preferred channel for this contact, press the soft key **OK**. It is also possible to use the keypad to enter a channel.

3. Press the soft key **SAVE** to save the contact information.
4. Press the soft key **EXIT** to leave the phone book.

Editing a contact

1. Press the soft key **PHBOOK**.
2. Select the contact.
3. Press and turn the selector knob to browse through the details of the contact and continue as described in *Adding a contact to the phone book* from step 2 onwards.

Deleting a contact

1. Press the soft key **PHBOOK**.
2. Turn the selector knob to browse to the contact you want to delete.
3. Press the soft key **DELETE**.
4. Press **EXIT** to leave the phone book and return to VHF operation.

Replay function

Replay allows the operator to playback received voice messages in the loudspeaker. Recording is activated automatically when a signal is received. Recording is not possible during playback. Up to 60 tracks or 240 seconds can be handled. During a power cycle the recorded tracks are deleted.

The recorded channel is displayed. The message length is shown in seconds. The display shows how old the message is. If the 240 s storage limit is reached, the oldest data is overwritten.

Replaying recorded messages

Press the Replay button (short press). The latest message (message) is repeated. Information about this message is shown in the display.

To stop replaying the message press the soft key **STOP**.

To rewind through the recorded messages make a long press on the Replay button.

To stop replaying a message press **STOP** or the PTT button on the speaking device.

If a signal is received while in replay mode the display shows RX in the display.

Setup

The following setup pages are described in this section of the manual:

- *Radio setup*
- *Channel setup*
- *Power Supply*
- *System setup*
- *Controller setup*

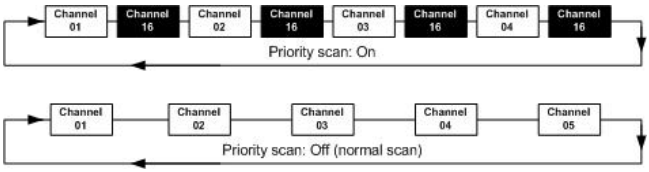
Accessing a setup page

To change a setting in one of the **SETUP** pages, do as follows

1. Press the soft key **SETUP**.
2. Press the arrow soft key ▶ or ◀ to advance to **SETUP** page you want to edit.
3. Turn the selector knob to go to a setting, then press the selector knob to change the setting.
4. Press **EXIT** to return to normal radio operation.

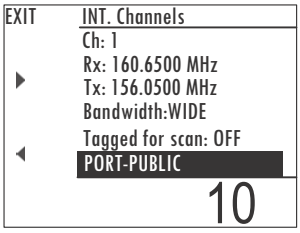
Radio setup

Parameter	Description
Scan Hang Time	Scan hang time, in seconds on an active receiving working channel. The time is measured from the signal is detected. The radio remains on the channel for the set time interval, if a signal was detected. **OFF**: Resumes scanning when signal disappears (default) **4**, **6**, **8**, **10**: Hang time in seconds.
Scan Resume	Scan resume time, in seconds. When the programmed time of inactivity has elapsed, and when watch/scan has been aborted using a press on PTT, or after power-up, scan or watch is resumed. **OFF**: Automatic resume is deactivated (default) **3**, **6**, **10**, **15**, **20**, **25**, **30**: Resume time in seconds.
Watch Mode	**DUAL**: Dual watch monitoring the working channel and the priority channel (channel 16, default for international channels). **TRIPLE**: Triple watch. The working channel is watched with the priority channel (channel 16) and the programmed call channel (if any, otherwise dual watch).

Parameter	Description
Priority Scan	**ON**: All channels tagged for scanning are scanned while monitoring channel 16. (default). **OFF**: Only the channels tagged for scanning are scanned in sequence, not channel 16, unless it is tagged for scanning. 
ATIS code	The ATIS code (Automatic Transmitter Identification System) is used for identification to marine coast and inland stations and its use is mandatory in a number of European inland waterways such as e.g. the river Rhine. Like the MMSI number the ATIS number is issued by the relevant authority. ATIS for foreign leisure crafts: For ships coming from states which are not member of the Regional Arrangement the ATIS-Code is based on the MMSI with a 9 as the first digit.[a] **Note**: The ATIS number can be programmed once. If a wrong number has been entered and stored, or if there is a requirement to change it, contact your authorized dealer.

a. The Committee Rainwat in its 12. Meeting (October 2008) decided to change the building rules of the ATIS code for vessels coming from a country outside the RAINWAT arrangement.

Channel setup

Parameter	Description
Channel Mode	To select the channel table for the primary channel. Channel tables available: **INT**, **BI**, **US**, **CA**, **ALT**. See also *VHF channel table* on page 13.
Bandwidth	Selection of the bandwidth for the fixed pre-programmed channels. This is recommended from Radio Regulations: **Wide**: Wide band is 25kHz channel bandwidth (default) **Narrow**: Narrow band defines a channel bandwidth of 12.5kHz Channel number display in narrow band mode: • **2xx** if the channel frequency is outside the wideband frequency grid. • **4xx** if the channel frequency is on the wideband grid.
Call Channel	Select the channel you want to use as a programmed call channel. This channel is used as one channel in triple watch and when you make a long press on the **16/C** button.
INT. Channels	You can view the channel settings. Press the soft key ▶ to advance the channel numbers. Bandwidth: **WIDE** (default) or **NARROW** Tagged for scan: **OFF** (default) or **ON**  Edit the service line text by pressing the selector wheel and enter new name by wheel or keypad. For customizing, contact your authorized dealer. Press the soft key **EXIT** to return to **CHANNEL SETUP**.
BI. Channels	As described above.
US. Channels	As described above.

Parameter	Description
CA. Channels	As described above.
ALT. Channels	As described above.
Private Channels	As described above.

Power Supply

Parameter	Description
Monitor	Set this to **ENABLED** if the radio is connected to a SAILOR 6081 Power Supply and Charger. Set this to **DISABLED** for any other power supply.
Status	Visible if ENABLED. Current status of the connected power supply.
Voltage	Visible if ENABLED. Current voltage.
Current	Visible if ENABLED. Current current.

System setup

SYSTEM SETUP	Description
System time & Date	View and set system time and date
Inactivity timeout	Inactivity time-out to exit functions (e.g. in setup) and return to the application. Range: 1 to 30 minutes, in 1 minute steps Default: 10 min.
Language	English
Theme	Changes the display colour. **BlackOnWhite** (default) **WhiteOnBlack**

SYSTEM SETUP	Description
Factory Defaults	Resets the radio to factory defaults. Press the selector knob and confirm the reset to factory default.
Radio Info:	**SW Version**: Software version of the radio **S/N**: Serial number of the radio **IP**: IP address of the radio
Password	If you need to change the identity of the radio (ATIS code), contact your local dealer.

Controller setup

Each of the controlling devices connected and powered has its own setting. The available settings may vary from controllers applied.

Controlling device	Description
Handset 1 vol:	Adjust earpiece volume for handset 1: ON, can be adjusted from OFF to 100, in steps of 5. **Note**: The handset connected to the front connector has top priority and is configured to ON.
Handset 2 vol:	Adjust earpiece volume for handset 2: ON, can be adjusted from OFF to 100, in steps of 5.
Ext. speaker	**FIX**: Fixed level is set for external speaker **REL**: Relative level following volume adjustment of the internal speaker
Ext. fixed vol:	External speaker fixed volume: **OFF**, 5 to 100 in steps of 5
Wheel lock:	You can set a time interval after which the SQ, volume and selector knobs are locked and protected against unintentional use. Then a lock symbol is shown in the display. Press any key to unlock the knobs. **OFF**, 10s, 20s, 30s, 40s, 50s, 60s

Top-level standby soft-key functions and setup pages

Top-level standby	
SCAN	EXIT START TAG FILTER
LOCAL	
PHBOOK	EXIT ADD FILTER DEL
SETUP	EXIT ▶ ◀

Setup pages	
RADIO SETUP	Scan Hang Time Scan Resume Watch mode Priority Scan ATIS code
CHANNEL SETUP	Channel Mode Bandwidth Call Channel Int. Channels BI. Channels US. Channels CA. Channels ALT. Channels Private Channels
POWER SUPPLY	Monitor

Setup pages	
SYSTEM SETUP	System time & date Inactivity timeout Language Theme Factory Defaults Password Radio Info
CONTROLLER SETUP	Handset 1 vol: Handset 2 vol: Ext. Speaker Ext. fixed vol: Wheel lock

Service & maintenance

Contact for support

Contact your authorized dealer for technical service and support of the VHF radio. Before contacting your authorized dealer you can go through the troubleshooting guide to solve some of the most common operational problems.

Maintenance

Preventive maintenance

Maintenance of the SAILOR 6248 VHF can be reduced to a maintenance check at each visit of the service staff. Inspect the radio for mechanical damages, salt deposits, corrosion and any foreign material. Due to its robust construction and ruggedness the radio has a long lifetime. Anyway it must carefully be checked at intervals not longer than 12 months - dependent on the current working conditions.

Salt deposits

In case the equipment has been exposed to sea water there is a risk of salt crystallization on the keys and knobs and they may become inoperable. Clean the VHF radio and speaker microphones with fresh water.

Error messages and warnings

Errors and warning messages are shown in the display and are read-only.

Troubleshooting guide

Action	Symptom	Remedy
The radio will not turn on	The display is empty.	Check if power is present. Check fuse which is placed in the power connector. Check performance of power supply if connected to one.
No communication	The loudspeaker is mute.	Check the antenna installation. Check antenna cable. Check handset/Handmicrophone and cable.
Handset configuration	No sound in earpiece	The earpiece volume may be configured to OFF. See section *Controller setup in the user manual* on how to adjust the earpiece volume of the handset.
Device failure		If any of the checks and tests described in this section do not assist in resolving the difficulties experienced in the operation and/or performance of the VHF installation, a fault may have developed in the VHF radio itself. When contacting an authorized Thrane & Thrane representative be sure to provide as much information as possible describing the observed behavior - also including the type of the VHF radio, its serial number, and software release version (both found in the setup menu Controller Setup).

Action	Symptom	Remedy
WARNING: POWER SUPPLY LOST CONTACT	Power supply status cannot be monitored.	In Setup, Power Supply, set Monitor to disabled. You can only monitor the power supply if the radio is powered by a SAILOR 6081 Power Supply Unit and Charger.
System Time & Date	Manually entered time & date is overridden	If valid time information is received via NMEA LWE on LAN port, this time source is used to set the system time. If this is not wanted, disconnect LAN cable. Position NMEA sentences from the talkers GP, GL GN (and GA) are prioritized. Position source is selected by the quality indicator: 1. Differential 2. Precise, Autonomomous, Float_RTK, Realtime_RTK 3. Estimated and Manuel 4. Unknown (for instance if not supported in sentence) 5. Simulated and Invalid The device will automatically switch to the position source with the highest priority available after 5 seconds when switching to a lower priority input and 30 seconds when switching to a detected higher priority input.

Replacing the fuse in the power connector

One fuse is installed in the power connector. If the fuse is blown, do as follows:

1. Track down why the fuse was blown and solve the problem.
2. Take out the old fuse.
3. Insert the new fuse. The fuse rating is 7.5 A T.

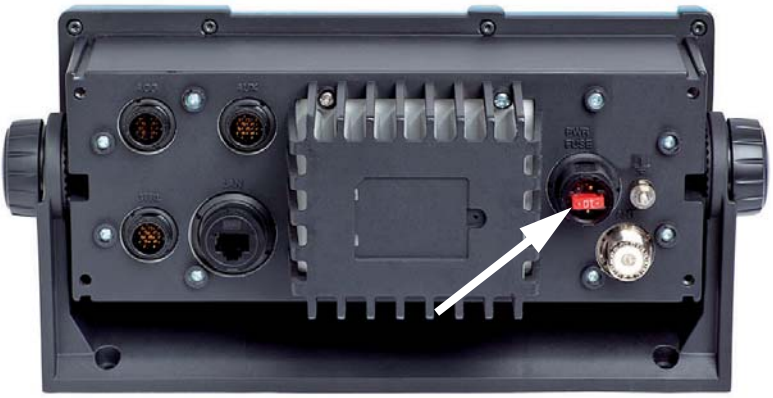


Figure 3: Replacing the fuse in the power connector

Replacing the fuse in the SAILOR 6090 Power Converter

One fuse is installed in the SAILOR 6090 Power Converter. If the fuse is blown, do as follows:

1. Track down why the fuse was blown and solve the problem.
2. Take out the old fuse.
3. Insert the new fuse. The fuse rating is 10 A T.

Figure 4: Replacing the fuse in the Power Converter

Warranty and returning units for repair

Should your Cobham SATCOM product fail, please contact your dealer or installer, or the nearest Cobham SATCOM partner. You will find the partner details on www.cobham.com/satcom, **Technical Service Partner List**. You can also access the Partner Portal at www.cobham.com/satcom, **Cobham SYNC Partner Portal**, which may help you solve the problem. Your dealer, installer or Cobham SATCOM partner will assist you whether the need is user training, technical support, arranging on-site repair or sending the product for repair. Your dealer, installer or Cobham SATCOM partner will also take care of any warranty issue.

Repacking for shipment

Should you need to send the product for repair, please read the below information before packing the product.

The shipping carton has been carefully designed to protect the SAILOR 6248 VHF and its accessories during shipment. This carton and its associated packing material should be used when repacking for shipment. Attach a tag indicating the type of service required, return address, part number and full serial number. Mark the carton FRAGILE to ensure careful handling.

Note | Correct shipment is the customer's own responsibility.

If the original shipping carton is not available, the following general instructions should be used for repacking with commercially available material.

1. Wrap the defective unit in heavy paper or plastic. Attach a tag indicating the type of service required, return address, part number and full serial number.
2. Use a strong shipping container, e.g. a double walled carton.
3. Protect the front- and rear panel with cardboard and insert a layer of shock-absorbing material between all surfaces of the equipment and the sides of the container.
4. Seal the shipping container securely.
5. Mark the shipping container FRAGILE to ensure careful handling.

Failure to do so may invalidate the warranty.

Specifications

Transceiver unit SAILOR 6248 VHF

Item	Specification
Weight SAILOR 6248 VHF	< 1.50 kg (3.3 lbs) approximately
Box weight SAILOR 6248 VHF	3.8 kg (8.4 lbs) approximately, including SAILOR 6201 Handset with cradle, and wall mount cradle, SAILOR 6204 Control Speaker Microphone and Installation and user manual in box.
Dimensions	**Height**: Outer dimension 107 mm, hole height for flush mount 89 mm **Width**: Outer dimension 241 mm, hole width for flush mount 227 mm **Depth**: Outer dimension from front of knobs 132 mm, depth for flush mount 94 mm
Operating temperature	-25˚C to 55˚C (5˚F to 131˚F)
Storage temperature	-30˚C to 80˚C (-22˚F to 176˚F)
Power supply	12 VDC Nominal (10,8– 15,6 VDC)
Current consumption	Max. 7 A
Current consumption at 12 VDC (no accessories connected)	RX: 0.5 A TX: 5 A
Current consumption at 12 VDC (all accessories connected)	RX: 0.7 A TX: 7 A

Item	Specification
Frequency range	TX: 156,000 MHz — 157,425 MHz, RX: 156,000 MHz — 163.425 MHz
Channel spacing	12.5 kHz and 25 kHz, all international maritime channels
Number of P channels	The radio may be programmed with up to 100 private channels in all channel modes.
Modulation 25 kHz 12.5 kHz	 16K0G3E 10K0G3E
Antenna	50 Ohm antenna, 50 Ohm female SO239 for PL259 plug
Water ingress	IPx8 and IPx6 all over. For flush-mount installations a sealing gasket is included in the delivery.
Transmitter	
Transmit power	Hi/Lo: 25 W and 1 W
RF output power	High: 25 W +0 dB / - 1.5 dB Low: 1 W +0 dB / - 1.5 dB
RF output power, Canada	High: 21 W ±0.75 dB Low: 0.8 W ±0.75 dB
Frequency error	Below 500 Hz
Adjacent channel power	Below 75 dB
Conducted spurious emission	Below 0.25 μW
Distortion	Below 3%
S/N ratio	Better than 46 dB

Item	Specification
Receiver	
Sensitivity	< -119 dBm typically @ 20 dB SINAD CCITT weighted
LF power	Built-in loudspeaker: 6 W (at 5 kHz dev./1 kHz tone). External loudspeaker: 6 W / 8 Ohm
Distortion	Below 5%
S/N ratio	Better than 43 dB
Spurious emissions	Below 2 nW
Spurious response rejection	More than 74 dB
Intermodulation response	More than 73 dB
Co-channel rejection	Better than —10 dB
Adjacent channel selectivity	More than 74 dB
Blocking level	More than 94 dBμV

SAILOR 6090 Power Converter 24—12 V

Item	Description
Weight	300 g
Dimensions	Height: 33 mm Width: 190 mm Depth: 85 mm
Operating temperature	-25˚C to 55˚C (5˚F to 131˚F)

Item	Description
Storage temperature	-30˚C to 80˚C (-22˚F to 176˚F)
Input voltage	21—32 VDC
Output voltage	12.5 VDC
Output current (max.)	8 A

Approval

EU Declaration of Conformity

Thrane & Thrane A/S declares that the equipment complies with the specifications of the Radio Equipment Directive (RED) 2014/53/EU.
The full text of the EU Declaration of Conformity is available at the internet address: https://sync.cobham.com/satcom/products/marine

Maritime channels

International channels (INT)

Channels	TX MHz	RX MHz	SIMPLEX Intership	SIMPLEX Port	DUPLEX Port	DUPLEX Public
1	156,050	160,650			●	●
2	156,100	160,700			●	●
3	156,150	160,750			●	●
4	156,200	160,800			●	●
5	156,250	160,850			●	●
6	156,300	156,300	●			
7	156,350	160,950			●	●
8	156,400	156,400	●			
9	156,450	156,450	●	●		
10	156,500	156,500	●	●		
11	156,550	156,550		●		
12	156,600	156,600		●		
13	156,650	156,650	●	●		
14	156,700	156,700		●		
15	156,750	156,750	●	●		
16	156,800	156,800	Distress and calling			
17	156,850	156,850	●	●		
18	156,900	161,500			●	●
19	156,950	161,550			●	●
1019 ***)	156,950	156,950		●		
2019 ***)		161,550		● RX)		
20	157,000	161,600			●	●
1020 ***)	157,000	157,000		●		
2020 ***)		161,600		● RX)		
21 **)	157,050	161,650				
22 **)	157,100	161,700				
23 **)	157,150	161,750				
24 **)	157,200	161,800				
25 **)	157,250	161,850				
26 **)	157,300	161,900				
27	157,350	161,950			●	●
1027 ***)	157,350	157,350		●		
28	157,400	162,000			●	●
1028 ***)	157,400	157,400		●		

Channels	TX MHz	RX MHz	SIMPLEX Intership	SIMPLEX Port	DUPLEX Port	DUPLEX Public
60	156,025	160,625			●	●
61	156,075	160,675			●	●
62	156,125	160,725			●	●
63	156,175	160,775			●	●
64	156,225	160,825			●	●
65	156,275	160,875			●	●
66	156,325	160,925			●	●
67	156,375	156,375	●	●		
68	156,425	156,425		●		
69	156,475	156,475	●	●		
70	156,525	156,525	DSC	DSC		
71	156,575	156,575		●		
72	156,625	156,625	●			
73	156,675	156,675	●	●		
74	156,725	156,725		●		
75	156,775	156,775		● L)		
76	156,825	156,825		● L)		
77	156,875	156,875	●			
78	156,925	161,525			●	●
1078 ***)	156,925	156,925		●		
2078 ***)		161,525		● RX)		
79	156,975	161,575			●	●
1079 ***)	156,975	156,975		●		
2079 ***)		161,575		● RX)		
80 **)	157,025	161,625				
81 **)	157,075	161,675				
82 **)	157,125	161,725				
83 **)	157,175	161,775				
84 **)	157,225	161,825				
85 **)	157,275	161,875				
86 **)	157,325	161,925				
87	157,375	157,375		● *)		
88	157,425	157,425		● *)		

L) 1 W TX power

RX) Only RX: Transmission is blocked.

*) Channel 87 and 88 became simplex channels following the introduction of AIS1 at 161.975 MHz and AIS2 on 162.025 MHz.

**) According to Radio Regulations Final Acts WRC-15 Appendix 18 these channels are repurposed and must be default disabled as of January 1st 2017.

***) According to Radio Regulations Final Acts WRC-15 Appendix 18 these channels must be default enabled as of January 1st 2017.

These are the default channels. Additional narrowband channels can be enabled, see *Channel setup* on page 21

US channels

Channels	TX MHz	RX MHz	SIMPLEX	DUPLEX
1A	156,050	156,050	●	
2				B)
3				B)
4				B)
5A	156,250	156,250	●	
6	156,300	156,300	●	
7A	156,350	156,350	●	
8	156,400	156,400	●	
9	156,450	156,450	●	
10	156,500	156,500	●	
11	156,550	156,550	●	
12	156,600	156,600	●	
13	156,650	156,650	● L)	
14	156,700	156,700	●	
15		156,750	● RX)	
16	156,800	156,800	Distress and calling	
17	156,850	156,850	●	
18A	156,900	156,900	●	
19A	156,950	156,950	●	
20	157,000	161,600		●
20A	157,000	157,000	●	
21A	157,050	157,050	● !)	
22A	157,100	157,100	● !)	
23A	157,150	157,150	● !)	
24	157,200	161,800		●
25	157,250	161,850		●
26	157,300	161,900		●
27	157,350	161,950		●
28	157,400	162,000		●

Channels	TX MHz	RX MHz	SIMPLEX	DUPLEX
60				B)
61				B)
62				B)
63A	156,175	156,175	●	
64				B)
65A	156,275	156,275	●	
66A	156,325	156,325	●	
67	156,375	156,375	● L)	
68	156,425	156,425	●	
69	156,475	156,475	●	
70	156,525	156,525	DSC	
71	156,575	156,575	● L)	
72	156,625	156,625	●	
73	156,675	156,675	●	
74	156,725	156,725	●	
75			B)	
76			B)	
77	156,875	156,875	●	
78A	156,925	156,925	●	
79A	156,975	156,975	●	
80A	157,025	157,025	●	
81A	157,075	157,075	● !)	
82A	157,125	157,125	● !)	
83A	157,175	157,175	● !)	
84	157,225	161,825		●
85	157,275	161,875		●
86	157,325	161,925		●
87A	157,375	157,375	● *)	
88A	157,425	157,425	● *)	

Channels	RX MHz
W1	162,550
W2	162,400
W3	162,475
W4	162,425
W5	162,450
W6	162,500
W7	162,525

L) 1 W TX power. Channels 13, 67 and 71 are limited to low transmission power.

B) Channels 2, 3, 4, 60, 61, 62, 64, 75 and 76 cannot be selected in US mode.

!) Channels 21A, 22A, 23A, 81A, 82A and 83A may be legally used in some circumstances but not by the general public in US waters.

RX) Only RX: transmissions are blocked.

*) Channels 87 and 88 became simplex channels following the introduction of AIS1 at 161.975 MHz and AIS2 on 162.025 MHz.

These are the default channels. Additional narrowband channels can be enabled, see *Channel setup* on page 21.

CA channels

Channels	TX MHz	RX MHz	SIMPLEX	DUPLEX
1	156,050	160,650		●
2	156,100	160,700		●
3	156,150	160,750		●
4A	156,200	156,200	● !)	
5A	156,250	156,250	●	
6	156,300	156,300	● !)	
7A	156,350	156,350	●	
8	156,400	156,400	●	
9	156,450	156,450	●	
10	156,500	156,500	●	
11	156,550	156,550	●	
12	156,600	156,600	●	
13	156,650	156,650	●	
14	156,700	156,700	●	
15	156,750	156,750	● L)	
16	156,800	156,800	Distress and calling	
17	156,850	156,850	● L)	
18A	156,900	156,900	●	
19A	156,950	156,950	● !)	
20	157,000	161,600		● L)
21A	157,050	157,050	● !)	
21B		161,650	● RX)	
22A	157,100	157,100	● !)	
23	157,150	161,750		●
24	157,200	161,800		●
25	157,250	161,850		●
26	157,300	161,900		●
27	157,350	161,950		●
28	157,400	162,000		●

Channels	TX MHz	RX MHz	SIMPLEX	DUPLEX
60	156,025	160,625		●
61A	156,075	156,075	● !)	
62A	156,125	156,125	● !)	
63A	156,175	156,175	● !)	
64	156,225	160,825		●
64A	156,225	156,225	●	
65A	156,275	156,275	● L)	
66A	156,325	156,325	● L)	
67	156,375	156,375	● !)	
68	156,425	156,425	●	
69	156,475	156,475	●	
70	156,525	156,525	DSC	
71	156,575	156,575	●	
72	156,625	156,625	● !)	
73	156,675	156,675	● !)	
74	156,725	156,725	●	
75	156,775	156,775	● L)	
76	156,825	156,825	● L)	
77	156,875	156,875	● L)	
78A	156,925	156,925	●	
79A	156,975	156,975	●	
80A	157,025	157,025	●	
81A	157,075	157,075	● !)	
82A	157,125	157,125	● !)	
83A	157,175	157,175	● !)	
83B		161,775	● RX)	
84	157,225	161,825		●
85	157,275	161,875		●
86	157,325	161,925		●
87	157,375	157,375	● *)	
88	157,425	157,425	● *)	

Channels	RX MHz
W1	162,550
W2	162,400
W3	162,475
W4	162,425
W5	162,450
W6	162,500
W7	162,525

L) 1 W TX power. Channels 15, 17, 20, 65, 66, 75, 76 and 77 are limited to 1 W transmission power.

!) Channels 4A, 6, 19A, 21A, 22A, 61A, 62A, 63A, 67, 72, 73, 81A, 82A and 83A may be legally used in some circumstances but not by the general public in CA waters.

RX) Only RX: transmission is blocked.

*) Channels 87 and 88 became simplex channels following the introduction of AIS1 at 161.975 MHz and AIS2 on 162.025 MHz.

These are the default channels. Additional narrowband channels can be enabled, see *Channel setup* on page 21.

BI channels

Channels	TX MHz	RX MHz	SIMPLEX Intership	SIMPLEX Port	DUPLEX Port	DUPLEX Public
1	156,050	160,650			●	●
2	156,100	160,700			●	●
3	156,150	160,750			●	●
4	156,200	160,800			●	●
5	156,250	160,850			●	●
6	156,300	156,300	● L)			
7	156,350	160,950			●	●
8	156,400	156,400	● L)			
9	156,450	156,450	●	●		
10	156,500	156,500	● L)	● L)		
11	156,550	156,550		● L)		
12	156,600	156,600		● L)		
13	156,650	156,650	● L)	● L)		
14	156,700	156,700		● L)		
15	156,750	156,750	● L)	● L)		
16	156,800	156,800	Distress and calling			
17	156,850	156,850	● L)	● L)		
18	156,900	161,500			●	●
19	156,950	161,550			●	●
1019 ***)	156,950	156,950		●		
2019 ***)		161,550		●RX)		
20	157,000	161,600			●	●
1020 ***)	157,000	157,000		●		
2020 ***)		161,600		●RX)		
21 **)	157,050	161,650				
22 **)	157,100	161,700				
23 **)	157,150	161,750				
24 **)	157,200	161,800				
25 **)	157,250	161,850				
26 **)	157,300	161,900				
27	157,350	161,950			●	●
1027 ***)	157,350	157,350		●		
28	157,400	162,000			●	●
1028 ***)	157,400	157,400		●		

Channels	TX MHz	RX MHz	SIMPLEX Intership	SIMPLEX Port	DUPLEX Port	DUPLEX Public
60	156,025	160,625			●	●
61	156,075	160,675			●	●
62	156,125	160,725			●	●
63	156,175	160,775			●	●
64	156,225	160,825			●	●
65	156,275	160,875			●	●
66	156,325	160,925			●	●
67	156,375	156,375	●	●		
68	156,425	156,425		●		
69	156,475	156,475	●	●		
70	156,525	156,525	DSC	DSC		
71	156,575	156,575		● L)		
72	156,625	156,625	● L)			
73	156,675	156,675	●	●		
74	156,725	156,725		● L)		
75	156,775	156,775		● L)		
76	156,825	156,825		● L)		
77	156,875	156,875	● L)			
78	156,925	161,525			●	●
1078 ***)	156,925	156,925		●		
2078 ***)		161,525		●RX)		
79	156,975	161,575			●	●
1079 ***)	156,975	156,975		●		
2079 ***)		161,575		●RX)		
80 **)	157,025	161,625				
81 **)	157,075	161,675				
82 **)	157,125	161,725				
83 **)	157,175	161,775				
84 **)	157,225	161,825				
85 **)	157,275	161,875				
86 **)	157,325	161,925				
87	157,375	157,375		● *)		
88	157,425	157,425		● *)		

L) 1 W TX power on channels 6, 8, 10, 11, 12, 13, 14, 15, 17, 71, 72, 74, 75, 76 and 77.

RX) Only RX) Transmission is blocked.

*) Channels 87 and 88 became simplex channels following the introduction of AIS1 at 161.975 MHz and AIS2 on 162.025 MHz.

**) According to Radio Regulations Final Acts WRC-15 Appendix 18 these channels are repurposed and must be default disabled as of January 1st 2017.

***) According to Radio Regulations Final Acts WRC-15 Appendix 18 these channels must be default enabled as of January 1st 2017.

NB! The ATIS function is enabled on all channels.
Dual Watch & Scanning modes are disabled.

Alternative channels

If the radio is used in regions where neither of the four described standard channels are allowed, a reduced channel table with international channel

designators and frequencies can be made. Contact your local dealer for programming the alternative channels.

Private channels

Up to 100 licensed private channels may be specified. For programming the private channels contact your local dealer.

A

AIS	Automatic Identification System, a short range coastal tracking system used on ships and by Vessel Traffic Services for identifying and locating vessels by electronically exchanging data with other nearby ships.
ATIS	Automatic Transmission Identification System

G

GPL	General Public License

L

LAN	Local Area Network
LGPL	Lesser General Public License
LWE	Light Weight Ethernet

P

PTT	Push To Talk

T

TU	Transceiver Unit

V

VDR	Voyage Data Recorder, a data recording system designed for all vessels required to comply with the IMO's International Convention SOLAS Requirements in order to collect data from various sensors on board the vessel.
VHF	Very High Frequency

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