

GPS setup

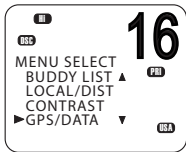
If a GPS receiver is connected to the NMEA port of the RS90, the radio will automatically receive the vessel's position and local time from the GPS.

If GPS data is not available for some reason, the radio will sound the NO GPS alert for 2 minutes (or until you press any key).

If the GPS data becomes older than 4 hours, the NO GPS alert will sound, and it can only be silenced manually or by the reception or manual entry of new GPS data.

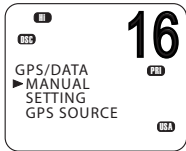
If the vessel's GPS data is older than 23.5 hours, the data will be erased and the NO GPS alert will sound.

Manually entering position and UTC time



→ **Note:** this function is only shown when there is no GPS receiver connected.

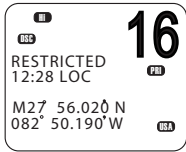
1. Select MENU → GPS/DATA → MANUAL.
2. Enter the latitude, then the longitude, then the UTC.



When you have finished, the latitude, longitude and UTC time will be shown on the standby screen. The prefix M indicates a manual entry.

→ **Notes**

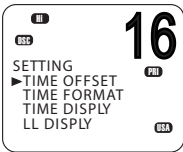
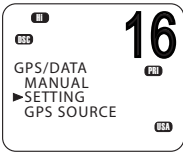
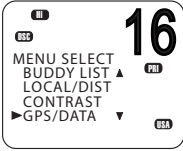
- Manual entries are cancelled if a real GPS position is received.
- A warning will be displayed after 4 hours to remind you that the current position information was manually entered.



Setting up local time offset

If your position and time data are being updated through a GPS receiver, you can enter the time difference between UTC and local time. Then the local time will be displayed on the screen.

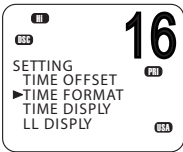
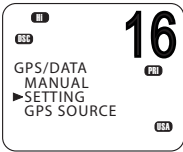
1. Select MENU → GPS/DATA → SETTING → TIME OFFSET
 2. Enter the difference between UTC and local time. You can set in quarter-hour increments up to a maximum offset of ±13 hours.
- **Note:** When local time is being displayed, LOC is displayed after the time on the standby screen.



Time format options

Time can be shown in 12 or 24 hour format.

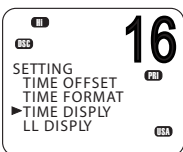
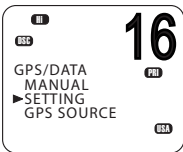
1. Select MENU → GPS/DATA → SETTING → TIME FORMAT.
 2. Select 12- or 24-hour as required.
- **Note:** When the 12-hour format has been selected, the time is displayed with an AM or PM suffix.



Time display options

You can toggle on or off the time display on the handset screens.

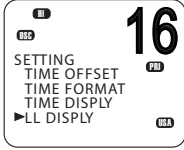
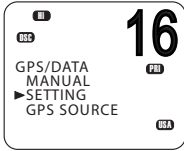
3. Select MENU → GPS/DATA → SETTING → TIME DISPLY.
4. Select ON or OFF as required.



Position display options

You can display or hide your vessel's position on screen.

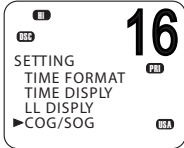
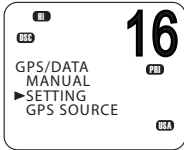
1. Select MENU → GPS/DATA → SETTING → LL DISPLY.
2. Select ON or OFF as required.



Course and speed display options

If position and time are being updated through a GPS navigation receiver, you can display or hide your course over ground (COG) and speed over ground (SOG) data on screen.

1. Select MENU → GPS/DATA → SETTING → COG/SOG.
2. Select ON or OFF as required.

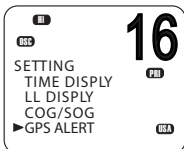
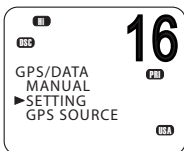


GPS alert options

If the GPS Alert setting is ON and no GPS signal is received for a period of 10 minutes, the alarm will sound for 2 minutes.

1. Select MENU → GPS/DATA → SETTING → GPS ALERT.
2. Select ON or OFF as required.

→ **Note:** The default setting is ON for the RS90 EU and OFF for the RS90 US.



General setup

Radio sensitivity

LOCAL/DIST allows you to set the sensitivity of the radio as follows:

- LOCAL
Recommended for use in areas of high radio noise; for example, close to cities. It is not recommended for open sea conditions. Local is displayed on the handset screen.
- DISTANT
Recommended for open sea conditions.

1. Select MENU → LOCAL/DIST.
 2. Scroll to DISTANT or LOCAL as required.
 3. Press [OK].
- **Note:** See also “Adjusting squelch” on page 24.

Display contrast level

Select MENU → CONTRAST.

1. Use the ▲ or ▼ keys to raise or lower the contrast.
2. Press [OK] to accept the setting.

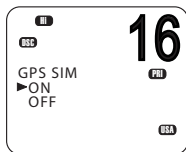
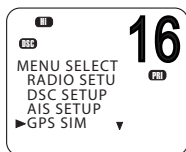
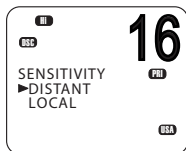
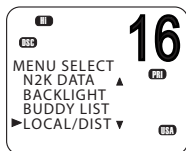
GPS simulator

The GPS simulator creates GPS data for test purposes.

1. Select MENU → GPS SIM.
2. Select ON or OFF as required.

→ Notes

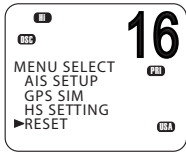
- The GPS simulator is set to OFF whenever the radio is turned on or whenever real GPS data is available through the COM port.
- The radio will be blocked from sending DSC calls while the GPS simulator is on.



Reset to factory defaults

This option returns every setting in the RS90 to factory default values.

However, MMSI settings and entries in your buddy list are preserved.



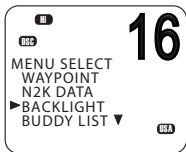
1. Select MENU → RESET.



2. Select YES to confirm and reset the radio, or NO to exit without resetting.

Backlight level

This option sets the brightness of the LCD screen and keypad.

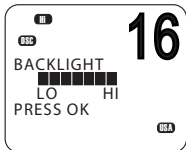


1. Select MENU → BACKLIGHT → LEVEL.
2. Use the ▲ and ▼ keys to set the level required.
3. Press [OK] to enable the setting and return to the menu.



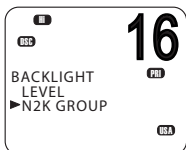
→ Notes

- The DISTRESS key backlight cannot be turned down.
- If the backlight setting is set to level 0 (off), the backlight will automatically turn ON at level 1 if the radio detects any DSC activity, or any buttons are pressed. The backlight will return to level 0 (off) after 10 seconds of inactivity.



Backlight N2K GROUP

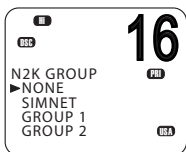
An N2K group combines N2K devices, such as a chart plotter, with the RS90 so that the backlight of the whole group can be controlled from one menu.



1. Select MENU → BACKLIGHT → N2K GROUP.
2. Select the N2K group you want to control.

→ Notes:

- NONE means the backlight adjustment will control just the RS90.



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Appendices

Draft v5.0
27 Feb 2014

Appendix 1 - Troubleshooting

1. The radio will not power up.

A fuse may have blown or there is no voltage getting to the transceiver.

Check the power cable for cuts, breaks, or squashed sections.

After checking the wiring, replace the 7 Amp fuse.

Check the battery voltage. This must be at least 10.5V.
2. The transceiver blows the fuse when the power is switched on.

The power wires may have been reversed.

Check that the red wire is connected to the positive battery terminal, and the black wire is connected to the negative battery terminal.
3. The speaker makes popping or whining noises when the vessel's engine is running.

Electrical noise may be interfering with the transceiver.

Re-route the power cables away from the engine.

Add a noise suppressor to the power cable.

Use resistive spark plug wires and/or use an alternator whine filter.
4. No sound from the external speaker.

Check that the external speaker cable is physically connected.

Check the soldering of the external speaker cable.
5. Transmissions are always on low power, even when high (Hi) power is selected.

The antenna may be faulty.

Test the transceiver with a different antenna.

Have the antenna checked out.

6. Battery symbol is displayed.

The power supply is too low.

Check the battery voltage. This should be at least $10.5\text{ V} \pm 0.5\text{ V DC}$.

Check the alternator on the vessel.

7. GPS alarm sounds and LCD shows: Please check GPS link! The NO GPS symbol is shown.

GPS data has been lost. This sequence will repeat every 4 hours until GPS data from an operational GPS receiver is available. The GPS cable may faulty or the GPS setting may be incorrect:

Check that the GPS cable is physically connected.

Check the polarity of the GPS cable.

Check the baud rate setting of the GPS if applicable. The baud rate setting should be 4800. Parity should be set to NONE.

Appendix 2 - Keys reference

VOL

The volume control is on the side of RS90 handset

This key also adjusts the volume of an external speaker, if connected.

16/9

Press [16/9] to immediately switch to the priority channel.

Press again to return to your original channel. The default Priority Channel is CH16.

In the USA, you can toggle between Channel 16 and Channel 9 as the priority channel. Hold down [16/9] until a beep sounds and the required priority channel is displayed.

DISTRESS

The red [DISTRESS] key on top of the handset sends a DSC distress call.

DSC must be switched on and an MMSI must have been entered into the radio.

For more information about distress calls, see "Introduction to DSC" on page 41.

PTT

The Push to Talk (PTT) key enables the microphone and transmits your voice over the selected channel. For further information, see “PTT Key” on page 25.

OK

This key has multiple functions depending on the operation you are doing:

- Sets the high/low transmission power.
The Hi or Lo icon on the display changes.
- In menus, press to confirm the selection.

▲ ▼

These keys are used for changing channel (see “Changing channel” on page 22); they are also used for scrolling through menu options.

X - Exit

When navigating menus, use [X] to clear incorrect entries, exit from a menu without saving changes, or go back to the previous screen.

CALL/MENU

Short press to enter the DSC CALL menu and make DSC calls. See “Introduction to DSC” on page 41.

Long press and hold to display the main menu. See “Using the menus” on page 25.

WX

US models

In USA and Canadian waters, short press [WX] to hear the most recently selected weather station. For further information, see “Receiving weather alerts (US model only)” on page 28.

For all other models

The [WX] key can be programmed to a channel of your choice. For further information see “Favourite channel (non-US models)” on page 30.

NAV

Hold down for about 1 second to enter Navigation mode, which displays information about a destination waypoint on the standby screen. For further information, see “Navigating to a waypoint” on page 39.

3CH

Press to toggle between your three favourite channels. For further information, see “Three favourite channels 3CH” on page 30.

SCAN

See “Scanning channels” on page 31.

The SCAN key is also used as the button for a soft key in DSC mode. See “Soft Keys” on page 42.

AIS

Press to enter AIS mode.

For AIS functionality, see “AIS procedures” on page 66.

For AIS setup, see “AIS Setup” on page 88.

IC

Hold down [AIS/IC] until the Hailer menu appears. For further information, see “Using the intercom” on page 35.

Alphanumeric keys

(Wired handset only). Used for entering numbers and names.

Shift Keys

The RS90 wired handset keypad includes a SHIFT key that modifies the function of some keys.

- Press [SHIFT] to display the SHIFT icon, and then press the number key to access the required function.

For a list of shift keys, see “Appendix 3 - Shift keys” on page 100.

Soft keys

A soft key is a name that appears at the bottom of the screen and provides additional functionality to the [SCAN] and/or [OK] and/or [3CH] keys during certain operations.

For further information, see “Soft Keys” on page 42.

Appendix 3 - Shift keys

The RS90 wired handset keypad includes a SHIFT key that modifies the function of some keys.

- Press [SHIFT] to display the SHIFT icon, and then press the number key to access the required function.

SHIFT + 2

Press SHIFT, then press 2 to access the AIS SETUP menu.

SHIFT + 3






Press SHIFT, then press 3 to access the external speaker ON/OFF menu.

SHIFT + 4

Press SHIFT, then press 4 to access the Waypoint menu.

Appendix 4 - Screen symbols

Draft v5.0
27 Feb 2014

Symbol	Meaning
A or B	Channel suffix
AIS	AIS is enabled
	Flashing if a weather alert has been received (US models only)
ATIS	ATIS is enabled
	Low battery warning. Activates at 10.5 V
	Incoming DSC call. Flashing if there are unread call log messages
CAN	Canadian channel bank is selected
CH1 , CH2 , CH3	Favourite channel 1, 2 or 3 is selected
	The current channel is a duplex channel
DSC	DSC is enabled
DW	Dual watch mode
Hi	High transmission power (25 W)
INT	International channel bank selected
Lo	Low transmission power (1 W)
LOCAL	'Local' sensitivity selected.. Otherwise blank for distance sensitivity
PRI	The priority channel is selected
RX	The radio is receiving
S	The Shift key has been pressed
SAME	The SAME alert setting is 'ON'
SCAN	Channel scanning in operation
SKIP	This channel is being skipped in the scan
TRI	Tri watch mode
TX	The radio is transmitting
USA	USA channel bank is selected
	Auto Switch is set to OFF

Appendix 5 - Beep tones and call alerts

Draft 5.0
27 Feb 2014

Name	Description
Error	2 short beeps
Acknowledge	1 long beep
Alarm	Two-tone ring; repeated for 2 minutes or until any key is pressed
LL position call alert	Friendly 5-tone ring sequence; press [SILENC] to cancel
WX alert/SAME alert	Ear-catching multi-tone sequence
ROUTINE call alert	Friendly 5-tone ring sequence; press [SILENC] to cancel
URGENCY call alert	Two-tone ring; repeated for 2 minutes or until [SILENC] pressed
SAFETY call alert	Two-tone ring; repeated for 2 minutes or until [SILENC] pressed
DISTRESS call alert	Two-tone ring; repeated for 2 minutes or until [SILENC] pressed

Appendix 6 - Warning Messages

GPS DATA LOST!!

The GPS signal has been lost. The connection may be broken.

DSC FUNCTION DISABLED ENABLE IN SETUP

The DSC function is disabled. For further information, see "Enabling DSC functionality" on page 84.

ATIS MODE DISABLE SCAN

Scan is automatically disabled in ATIS mode. For further information, see "ATIS" on page 65

EXCESSIVE VOLTAGE!!!

This warning will be displayed if the input voltage to the transceiver exceeds 16V.

Appendix 7 - Features

VHF radio features

- Communication Mode: Simplex and Semi-Duplex
- Dual/Tri Watch capability.
- Special key for quick selection of your three favourite channels.
- All channel priority scan

- Memory channel scan and All channel priority scan.
- Adjustable sensitivity setting to eliminate noise in high traffic urban areas.
- Receives international, Canadian and US marine VHF channels, including 10 weather channels where available and depending on the model purchased.
- Selectable high (25 W) or low (1 W) transmit power.
- VHF range depends on antenna height. Consequently, coast stations, which are normally located on high ground, have a longer range than small boats.

General features

- Stores up to 20 MMSI groups.
- Stores up to 200 GPS waypoints.
- Automatic position and time update when connected to a GPS receiver.

Practical features

- Handsets waterproof to JIS-7
- Wired handset includes speaker, microphone, cradle, and JIS-7 waterproof connector.
- Inductive charging cradle for the wireless handset.
- Adjustable keypad backlighting for ease of use at night.
- Adjustable contrast settings for the screens.
- Backlight synchronisation between MFD and VHF handset. MFD co-operation (backlight dim-10 levels) through N2K.

DSC and marine safety features

- Dedicated receiver for CH70
- Special key for quick access to international priority channels.
- Class D Digital Select Calling (DSC) capability.
- Special DSC distress call button to automatically transmit your MMSI and position.
- DSC GROUP CALL and ALL SHIPS call.
- Call log for the 20 most recent incoming DSC calls.
- Distress call log for the 20 most recent distress calls.
- National Oceanic and Atmospheric Administration (NOAA) and Specific Area Message Encoding (SAME) weather alert capability (US models).

- DSC calls to AIS targets.
- 10 weather channel with 1050 Hz alert tone detect (US model)
- SAME Weather function (US model).

AIS features

- Dual-channel AIS receiver.
- AIS CLASS-B transmitter (for Class-B model)
- Receives AIS information including:
Name of vessel, Call sign, Type of vessel, Destination, Speed (SOG),
Course (COG), Heading, Position, Navigational status, Rate of turn,
Vessel dimensions, MMSI.
- RS232 and RS422 interface.
- AIS chart drawing on all handsets.

ATIS features

- ATIS facility for inland waterways (EU models only).
- ATIS and DSC monitors work alternatively.

Connectivity features

- NMEA 2000 interface and NMEA 0183 connectivity.
- Loud hailer mode with listen-back capability.
- Foghorn mode providing manual and automatic signals.
- Connection for external horn button to activate the horn without the handset.
- Intercom facility between handsets.
- SO239 VHF antenna Socket.
- Voltage: 13.8 VDC \pm 15%
- External speaker. 4 OHM 6 Watt. D 100mm. Waterproof to IPX7.
- External speaker volume separate control on handset.

Navigation features

- Automated position requests for vessels on your buddy list.
- Ability to repeat NMEA 2000 data on handset, Depth, speed, course, heading, wind data
- Track your buddy function with output to NMEA 2000.

Voice recording features

- Voice recording and playback.

Draft v5.0
27 Feb 2014

Appendix 8 - DSC information

Class D equipment, which is specifically designed for recreational vessels, provides VHF DSC distress, urgency and safety as well as routine calling and position polling. Class D equipment includes a dedicated channel 70 DSC receiver, so you will never miss a DSC call.

Position polling refers to requesting the position of another vessel at regular intervals.

Appendix 9 - AIS information

There are several types of AIS device as follows:

Class A transceivers

Class A transceivers are similar to class B transceivers, but they are designed to be fitted on large vessels such as cargo ships and large passenger vessels. Class A transceivers transmit at a higher VHF signal power than class B transceivers and therefore can be received by more distant vessels, and also transmit more frequently. Class A transceivers are mandatory on all vessels over 300 gross tonnes on international voyages and certain types of passenger vessels under the international Safety of Life at Sea (SOLAS) regulations.

Class B transceivers

Similar to class A transceivers in many ways, but are normally lower cost due to the less stringent performance requirements. Class B transceivers transmit at a lower power and at a lower reporting rate than class A transceivers.

AIS transceivers

AIS transceivers are used by Vessel Traffic Systems to monitor and control the transmissions of AIS transceivers.

Aids to Navigation (AtoN) transceivers.

AtoN transceivers are mounted on buoys or other hazards to shipping in order to transmit details of their location to the surrounding vessels.

The RS90 VHF radio includes an AIS receiver-only function.

AIS Static and dynamic information

Defined transmit rates for Class A vessels shown below are provided for reference purposes only. The frequency of messages received vary due to a number of factors including but not limited to such factors as antenna height, gain and signal interference.

Static information is either broadcast every 6 minutes, when data has been amended, or upon request.

Dynamic information is broadcast depending on speed and course alteration based on the following tables:

Ship's dynamic conditions	Normal reporting interval
At anchor or moored	3 Minutes
0-14 knots	10 Seconds
0-14 knots and changing course	3 1/3 Seconds
14-23 knots	6 Seconds
14-23 knots and changing course	2 Seconds
Ship faster than 23 knots	2 Seconds
Ship faster than 23 knots and changing course	2 Seconds
Platform's condition	Normal reporting interval
Class B Shipborne mobile equipment not moving faster than 2 Knots	3 Minutes
Class B Shipborne mobile equipment moving 2-14 Knots	30 Seconds
Class B Shipborne mobile equipment moving 14-23 Knots	15 Seconds
Class B Shipborne mobile equipment moving faster than 23 Knots	5 Seconds
Search and Rescue aircraft (airborne mobile equipment)	10 Seconds
Aids to Navigation	3 Minutes
AIS transceiver	10 Seconds

Source of information for above table 1-1, 1-2: (ITU recommendations technical document: ITU-R M.1371-1)

Appendix 10 - Technical specification

→ **Note:** Specifications are subject to change without notice.

Draft v5.0
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General

Standard operation temperature	-20°C to +55°C (-4°F to 131°F)
Normal working voltage	12 VDC (10.8 to 15.6 VDC) battery system (negative ground)
Low battery detect voltage	10.5 V
Rx current drain at max audio power	≤1.5 A (one station only)
	Stand-by ≤0.35 A
	Hailer power ≤4 A
Tx current drain	Hi power ≤6 A (@13.6 VDC)
	Lo power ≤1.5 A (@13.6 VDC)
Dimensions	211.2 x 195.7 x 65.0 mm
Weight of transceiver	1.55 kg
VHF frequency range	Transmit 156.025 to 157.425 MHz (default)
	Receive 156.025 to 163.275 MHz (default)
Modulation	FM (16K0G3E) DSC (16K0G2B)
Usable channels	International, USA, Canada, Weather (country specific)
Channel spacing	25 KHz
Frequency stability	±5 PPM
Digital Selectivity Calling (DSC)	Class-D (EN301025) with dual receiver (individual CH70)
DSC standards	ITU-R M.493-13 (US models), EN 300-338-3 (EU models)
AIS standards	ITU-R M.1371-4
Other standards	EN 60950-1:2006 /A1:2010
LCD display	128 x 256 pixel LCD FSTN – 1.3" x 2.6"
Contrast control	Yes
Dimming control	Yes
Antenna connector	SO-239 (50 ohm)
NMEA 2000 connector	Micro-C (5 pin)
Waterproof	JIS-7
Compass safe distance	0.5 m (1.5')

Receiver

Intermediate frequency	1st 21.4 MHz
	2nd 450 KHz
Sensitivity	12dB SINAD dBuV \leq -6 BuV
Squelch sensitivity	\leq -4 dBuV
Spurious response rejection ratio	\geq 70 dB
Adjacent channel selectivity	\geq 70 dB
Intermodulation response	\geq 68 dB
S/N at 3KHz deviation	\geq 40 dB
Audio output power at THD 10%	5W (external speaker output)
	0.5 W handset
Audio distortion	\leq 5%
Audio response	+1 to -3 dB of 6 dB/octave from 300 Hz to 3 kHz

Transmitter

Frequency error	\pm 5 PPM
RF power	Hi: 23 ± 2 W
	Lo: 0.8 ± 0.2 W
Maximum deviation	± 5 KHz
S/N at 3 KHz deviation	40 dB
Modulation distortion \pm 3 KHz	\leq 5%
Audio response at 1KHz deviation	+1 to -3 dB of 6 dB/octave from 300 Hz to 3 kHz
Spurious/harmonic emissions	Hi/Lo <0.25 uW
Modulation sensitivity	\leq 20 mV
Transmitter protection	Open/short circuit of antenna

Communications

Comm. port NMEA 0183	NMEA 0183, 4800 baud
Comm. port NMEA 2000	NMEA 2000
NMEA 0183 input (receive)	RMC, GGA, GLL, GNS
NMEA 0183 output (transmit)	DSC (for DSC call), DSE (for enhanced position). AIVDM (AIS) 38400 Baud

Hailer

Audio power out	30 W @ 4 Ohms
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AIS

AIS function	Dual receivers only
Receiver frequency	CH87 - 161.975 MHz
	CH88 - 162.025 MHz (default channel)
Supported AIS Information	Status/Destination/ETA, Vessel Name, Type of vessel, Call sign, MMSI number, IMO number, Draft/Size of vessel, Vessel position, SOG/COG/ Rate of turn/Heading
HS90 wireless handset Unit limit	
Rx Frequency	2401~2480 MHz
Rx channel number	80
Rx Sensitivity @ PER <=1%	-92 dBm
Rx current	<60 mA
Nominal transmit power/peak power	18+/-2 dBm
Tx frequency error	<+/-30 ppm
Tx current	<150 mA
Functional range	200 m
HS90 cradle voltage	12 VDC battery system (negative ground)
HS90 cradle current drain	≤0.5 A

RS90 NMEA 2000 PGNS

- 127250 Vessel Heading
- 127258 Magnetic Variation
- 129025 Position, Rapid Update
- 129026 COG & SOG, Rapid Update
- 129029 GNSS Position Data
- 129033 Time & Date
- 129038 Class A position report (Rx,Tx)
- 129039 Class B position report (Rx,Tx)
- 129040 Class B extended position report (Rx, Tx)
- 129041 AIS Aids to Navigation (AtoN) Report
- 129283 Cross Track Error
- 129284 Navigation Data
- 129285 Navigation Route/WP Information
- 129792 DGNSs Broadcast binary message (Tx)
- 129793 UTC and date report (Tx)
- 129794 Class A static and voyage related data (rx, tx)
- 129795 Addressed binary message (tx)
- 129796 Acknowledge (tx)
- 129797 Binary broadcast message (tx)
- 129798 SAR Aircraft Position report (tx)
- 129799 Radio Frequency/Mode/Power
- 129800 UTC/Date enquiry (tx)
- 129801 Addressed safety msg (rx,tx)
- 129802 Broadcast safety msg (rx,tx)
- 129803 Interrogation (tx)
- 129804 Assignment Mode Command (tx)
- 129805 Data Link Management message (tx)
- 129807 AIS Group Assignment
- 129808 DSC Call Information
- 129809 AIS Class B "CS" Static Data Report, Part A
- 129810 AIS Class B "CS" Static Data Report, Part B
- 130074 Route and WP Service - WP List - WP Name & Position
- 130842 AIS and VHF Messages (Simrad Proprietary for AIS Class B 'CS')

Appendix 11 - US and ROW VHF marine channel charts

Draft v5.0
27 Feb 2014

The following channel charts are provided for reference only and may not be correct for all regions. It is the radio operator's responsibility to ensure correct channels and frequencies are used for local regulations.

International channel chart

CH	TX (MHz)	RX (MHz)	Mode	Traffic Type	Ship to Ship	Ship to Shore	Name Tag	Remark
01	156.050	160.650	D	Public Correspondence	No	Yes	TELEPHONE	
02	156.100	160.700	D	Public Correspondence	No	Yes	TELEPHONE	
03	156.150	160.750	D	Public Correspondence	No	Yes	TELEPHONE	
04	156.200	160.800	D	Port Operations	No	Yes	PORT OPS	
05	156.250	160.850	D	Port Operations	No	Yes	PORT OPS/VTS	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07	156.350	160.950	D	Port Operations	No	Yes	PORT OPS	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	COMMERCIAL	
09	156.450	156.450	S	Inter-ship	Yes	Yes	CALLING	
10	156.500	156.500	S	Commercial	Yes	Yes	COMMERCIAL	
11	156.550	156.550	S	Port Operations	Yes	Yes	VTS	
12	156.600	156.600	S	Port Operations	Yes	Yes	PORT OPS/VTS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to bridge)	Yes	No	BRIDGE COM	
14	156.700	156.700	S	Port Operations	Yes	Yes	PORT OPS/VTS	
15	156.750	156.750	S	Port Operations	Yes	Yes	PORT OPS	⊙ 1W only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	State Controlled	Yes	Yes	SAR	⊙ 1W only
18	156.900	161.500	D	Port Operations	No	Yes	PORT OPS	
19	156.950	161.550	D	Ship to Shore	No	Yes	SHIP-SHORE	
20	157.000	161.600	D	Port Operations	No	Yes	PORT OPS	
21	157.050	161.650	D	Port Operations	No	Yes	PORT OPS	
22	157.100	161.700	D	Port Operations	No	Yes	PORT OPS	
23	157.150	161.750	D	Public Correspondence	No	Yes	TELEPHONE	
24	157.200	161.800	D	Public Correspondence	No	Yes	TELEPHONE	
25	157.250	161.850	D	Public Correspondence	No	Yes	TELEPHONE	
26	157.300	161.900	D	Public Correspondence	No	Yes	TELEPHONE	
27	157.350	161.950	D	Public Correspondence	No	Yes	TELEPHONE	
28	157.400	162.000	D	Public Correspondence	No	Yes	TELEPHONE	
60	156.025	160.625	D	Public Correspondence	No	Yes	TELEPHONE	
61	156.075	160.675	D	Port Operations	No	Yes	PORT OPS	
62	156.125	160.725	D	Port Operations	No	Yes	PORT OPS	
63	156.175	160.775	D	Port Operations	No	Yes	PORT OPS	

Draft 5.0
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CH	TX (MHz)	RX (MHz)	Mode	Traffic Type	Ship to Ship	Ship to Shore	Name Tag	Remark
64	156.225	160.825	D	Public Correspondence	No	Yes	TELEPHONE	
65	156.275	160.875	D	Port Operations	No	Yes	PORT OPS	
66	156.325	160.925	D	Port Operations	No	Yes	PORT OPS	
67	156.375	156.375	S	Commercial, bridge-to-bridge	Yes	No	BRIDGE COM	
68	156.425	156.425	S	Inter-ship	Yes	No	SHIP-SHIP	
69	156.475	156.475	S	Port Operations	Yes	Yes	PORT OPS	
70	156.525	156.525	-	Digital Selective Calling - DSC	-----	-----	DSC	Ⓢ
71	156.575	156.575	S	Port Operations	Yes	Yes	PORT OPS	
72	156.625	156.625	S	Inter-ship	Yes	No	SHIP-SHIP	
73	156.675	156.675	S	Port Operations	Yes	Yes	PORT OPS	
74	156.725	156.725	S	Port Operations	Yes	Yes	PORT OPS	
77	156.875	156.875	S	Ship to Ship	Yes	No	SHIP-SHORE	
78	156.925	161.525	D	Ship to Shore	No	Yes	SHIP-SHORE	
79	156.975	161.575	D	Port Operations	No	Yes	PORT OPS	
80	157.025	161.625	D	Port Operations	No	Yes	PORT OPS	
81	157.075	161.675	D	Public Correspondence	No	Yes	TELEPHONE	
82	157.125	161.725	D	Public Correspondence	No	Yes	TELEPHONE	
83	157.175	161.775	D	Public Correspondence	No	Yes	TELEPHONE	
84	157.225	161.825	D	Public Correspondence	No	Yes	TELEPHONE	
85	157.275	161.875	D	Public Correspondence	No	Yes	TELEPHONE	
86	157.325	161.925	D	Public Correspondence	No	Yes	TELEPHONE	
87	157.375	161.975	D	Public Correspondence	No	Yes	TELEPHONE	
88	157.425	162.025	D	Public Correspondence	No	Yes	TELEPHONE	

Special notes on international channel usage

1. Low power (1W) only.
2. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70. This channel is only available on DSC enabled radios.

→ Notes

- The INTERNATIONAL channel bank is not legal for use in U.S. or Canada waters.
- Select the INTERNATIONAL channel bank for use in Australia, New Zealand and other Asia Pacific regions, and all other regions where otherwise not specified.

KEY: S = Simplex operating channel; D = Duplex operating channel.

USA channel chart

Draft v5.0
27 Feb 2014

CH	TX (MHz)	RX (MHz)	Mode	Traffic Type	Ship to Ship	Ship to Shore	Name Tag	Remark
01A	156.050	156.050	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
03A	156.150	156.150	S	US Government, Coast Guard	Yes	Yes	RESTRICTED	Ⓢ
05A	156.250	156.250	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07A	156.350	156.350	S	Commercial	Yes	Yes	COMMERCIAL	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	COMMERCIAL	
09	156.450	156.450	S	Recreational Calling Channel	Yes	Yes	CALLING	
10	156.500	156.500	S	Commercial	Yes	Yes	COMMERCIAL	
11	156.550	156.550	S	Commercial, VTS in Selected Areas	Yes	Yes	VTS	
12	156.600	156.600	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to-bridge), 1W with Power-up	Yes	No	BRIDGE COM	Ⓢ 1W
14	156.700	156.700	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
15	---	156.750	S	Environmental	-----	-----	ENVIRONMENTAL	Ⓢ RX only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	State Controlled	Yes	Yes	SAR	Ⓢ 1W only
18A	156.900	156.900	S	Commercial	Yes	Yes	COMMERCIAL	
19A	156.950	156.950	S	Commercial	Yes	Yes	COMMERCIAL	
20	157.000	161.600	D	Port Operations, Canadian Coast Guard	No	Yes	PORT OPS	
20A	157.000	157.000	S	Port Operations	Yes	Yes	PORT OPS	
21A	157.050	157.050	S	U.S. Government, Canadian Coast Guard	Yes	Yes	RESTRICTED	Ⓢ
22A	157.100	157.100	S	Coast Guard Liaison	Yes	Yes	COAST GUARD	
23A	157.150	157.150	S	U.S. Government, Coast Guard	Yes	Yes	RESTRICTED	Ⓢ
24	157.200	161.800	D	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
25	157.250	161.850	D	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
26	157.300	161.900	D	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
27	157.350	161.950	D	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
28	157.400	162.000	D	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
61A	156.075	156.075	S	U.S. Government, Canadian Coast Guard	Yes	Yes	RESTRICTED	Ⓢ
63A	156.175	156.175	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
64A	156.225	156.225	S	U.S. Government, Canadian Commercial Fishing	Yes	Yes	RESTRICTED	Ⓢ
65A	156.275	156.275	S	Port Operations	Yes	Yes	PORT OPS	
66A	156.325	156.325	S	Port Operations	Yes	Yes	PORT OPS	
67	156.375	156.375	S	Commercial, bridge-to-bridge, 1W with Power-up	Yes	No	BRIDGE COM	Ⓢ 1W
68	156.425	156.425	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
69	156.475	156.475	S	Boat Operations, Recreational	Yes	Yes	PLEASURE	
70	156.525	156.525		Digital Selective Calling - DSC	-----	-----	DSC	Ⓢ
71	156.575	156.575	S	Boat Operations, Recreational	Yes	Yes	PLEASURE	
72	156.625	156.625	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
73	156.675	156.675	S	Port Operations	Yes	Yes	PORT OPS	
74	156.725	156.725	S	Port Operations	Yes	Yes	PORT OPS	

CH	TX (MHz)	RX (MHz)	Mode	Traffic Type	Ship to Ship	Ship to Shore	Name Tag	Remark
77	156.875	156.875	S	Port Operations	Yes	Yes	PORT OPS	⊙ 1W only
78A	156.925	156.925	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
79A	156.975	156.975	S	Commercial	Yes	Yes	COMMERCIAL	
80A	157.025	157.025	S	Commercial	Yes	Yes	COMMERCIAL	
81A	157.075	157.075	S	U.S. Government, Environmental Protection Agency Operations	Yes	Yes	RESTRICTED	⊙
82A	157.125	157.125	S	U.S. Government, Canadian Coast Guard	Yes	Yes	RESTRICTED	⊙
83A	157.175	157.175	S	U.S. Government, Canadian Coast Guard	Yes	Yes	RESTRICTED	⊙
84	157.225	161.825	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
84A	157.225	157.225	S	Public Correspondence, Marine Operator			TELEPHONE	
85	157.275	161.875	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
85A	157.275	157.275	S	Public Correspondence, Marine Operator			TELEPHONE	
86	157.325	161.925	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
86A	157.325	157.325	S	Public Correspondence, Marine Operator			TELEPHONE	
87	157.375	161.975	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
87A	157.375	157.375	S	Public Correspondence, Marine Operator			COMMERCIAL	
88	157.425	162.025	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
88A	157.425	157.425	S	Commercial, Inter-ship Only	Yes	No	COMMERCIAL	

Special notes on USA channel usage

1. Low power (1 W) only.
2. Receive only.
3. Low power (1 W) initially. Override to high power by holding down H/L key before transmitting. Used normally in bridge-to-bridge communications.
4. Lightly shaded simplex channels 03A, 21A, 23A, 61A, 64A, 81A, 82A, and 83A cannot be lawfully used in U.S. waters unless special authorization is obtained from the U.S. Coast Guard. Not for use by the general public.
5. The letter "A" illuminated by the channel number indicates the USA channel is simplex.

This same channel is always duplex when selecting International. There is no "A" reference for International channels. The letter "B" is only used for some Canadian "Receive only" channels.

6. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70. This channel is only available on DSC enabled radios.

KEY: S = Simplex operating channel; D = Duplex operating channel

CANADA channel chart

Draft v5.0
27 Feb 2014

CH	TX (MHz)	RX (MHz)	Mode	Traffic Type	Ship to Ship	Ship to Shore	Name Tag	Remark
01	156.050	160.650	D	Public Correspondence	No	Yes	TELEPHONE	
02	156.100	160.700	D	Public Correspondence	No	Yes	TELEPHONE	
03	156.150	160.750	D	Public Correspondence	No	Yes	TELEPHONE	
04A	156.200	156.200	S	Canadian Coast Guard, SAR	Yes	Yes	CANADIAN CG	
05A	156.250	156.250	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07A	156.350	156.350	S	Commercial	Yes	Yes	COMMERCIAL	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	COMMERCIAL	
09	156.450	156.450	S	Recreational Calling Channel	Yes	Yes	CALLING	
10	156.500	156.500	S	Commercial	Yes	Yes	COMMERCIAL	
11	156.550	156.550	S	Commercial, VTS in Selected Areas	Yes	Yes	VTS	
12	156.600	156.600	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to-bridge) 1W with power-up	Yes	No	BRIDGE COM	⊙ 1W
14	156.700	156.700	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
15	156.750	156.750	S	Commercial	Yes	Yes	COMMERCIAL	⊙ 1W only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	State Controlled	Yes	Yes	SAR	⊙ 1W only
18A	156.900	156.900	S	Commercial	Yes	Yes	COMMERCIAL	
19A	156.950	156.950	S	Canadian Coast Guard	Yes	Yes	CANADIAN CG	
20	157.000	161.600	D	Canadian Coast Guard	No	Yes	CANADIAN CG	⊙ 1W only
21	157.050	161.650	D	Port Operations	No	Yes	PORT OPS	
21A	157.050	157.050	S	U.S. Government, Canadian Coast Guard	Yes	Yes	RESTRICTED	
21B	---	161.650	S	Port Operations	-----	-----	PORT OPS	RX only
22A	157.100	157.100	S	Canadian Coast Guard Liaison	Yes	Yes	CANADIAN CG	
23	157.150	161.750	D	Public Correspondence	No	Yes	TELEPHONE	
24	157.200	161.800	D	Public Correspondence	No	Yes	TELEPHONE	
25	157.250	161.850	D	Public Correspondence	No	Yes	TELEPHONE	
25B	---	161.850	S	Public Correspondence	-----	-----	TELEPHONE	RX only
26	157.300	161.900	D	Public Correspondence	No	Yes	TELEPHONE	
27	157.350	161.950	D	Public Correspondence	No	Yes	TELEPHONE	
28	157.400	162.000	D	Public Correspondence	No	Yes	TELEPHONE	
28B	---	162.000	S	Public Correspondence	-----	-----	TELEPHONE	RX only
60	156.025	160.625	D	Public Correspondence	No	Yes	TELEPHONE	
61A	156.075	156.075	S	U.S. Government, Canadian Coast Guard	Yes	Yes	RESTRICTED	⊙
62A	156.125	156.125	S	Canadian Coast Guard	Yes	Yes	CANADIAN CG	
64	156.225	160.825	D	Public Correspondence, Duplex	No	Yes	TELEPHONE	
64A	156.225	156.225	S	U.S. Government, Canadian Commercial Fishing	Yes	Yes	RESTRICTED	⊙
65A	156.275	156.275	S	Port Operations	Yes	Yes	PORT OPS	
66A	156.325	156.325	S	Port Operations	Yes	Yes	PORT OPS	⊙ 1W only
67	156.375	156.375	S	Commercial, SAR	Yes	No	COMMERCIAL	
68	156.425	156.425	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	

Draft 3.0
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CH	TX (MHz)	RX (MHz)	Mode	Traffic Type	Ship to Ship	Ship to Shore	Name Tag	Remark
69	156.475	156.475	S	Commercial Fishing Only	Yes	Yes	COMMERCIAL	
70	156.525	156.525	S	Digital Selective Calling - DSC	-----	-----	DSC	⊙
71	156.575	156.575	S	Boat Operations, Recreational	Yes	Yes	PLEASURE	
72	156.625	156.625	S	Inter-ship	Yes	No	SHIP - SHIP	
73	156.675	156.675	S	Commercial Fishing Only	Yes	Yes	COMMERCIAL	
74	156.725	156.725	S	Commercial Fishing Only	Yes	Yes	COMMERCIAL	
77	156.875	156.875	S	Port Operations	Yes	Yes	PORT OPS	⊙ 1W only
78A	156.925	156.925	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
79A	156.975	156.975	S	Commercial	Yes	Yes	COMMERCIAL	
80A	157.025	157.025	S	Commercial	Yes	Yes	COMMERCIAL	
81A	157.075	157.075	S	U.S. Government Operations	Yes	Yes	RESTRICTED	⊙
82A	157.125	157.125	S	U.S. Government, Canadian Coast Guard	Yes	Yes	RESTRICTED	⊙
83	157.175	161.775	D	Canadian Coast Guard	Yes	Yes	CANADIAN CG	
83A	157.175	157.175	S	U.S. Government, Canadian Coast Guard	Yes	Yes	RESTRICTED	⊙
83B	---	161.775	S	Canadian Coast Guard, RX Only	-----	-----	CANADIAN CG	
84	157.225	161.825	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
85	157.275	161.875	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
86	157.325	161.925	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
87	157.375	161.975	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
88	157.425	162.025	D	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	

Special notes on Canada channel usage

1. Low power (1 W) only.
2. Receive only.
3. Low power (1 W) initially. Override to high power by holding down H/L key before transmitting. Used normally in bridge-to-bridge communications.
4. Lightly shaded simplex channels 21A, 23A, 61A, 64A, 81A, 82A, and 83A cannot be lawfully used in Canada waters unless special authorization is obtained from the Canadian Coast Guard. Not for use by the general public.
5. The letter "A" illuminated by the channel number indicates the Canada channel is simplex. This same channel is always duplex when selecting International. There is no "A" reference for International channels. The letter "B" is only used for some Canadian "Receive only" channels.
6. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70. This channel is only available on DSC enabled radios.

→ **Note:** The CANADA mode is not legal to use in U.S. waters.

KEY: S = Simplex operating channel; D = Duplex operating channel.

US and Canada weather channels

CH	RX (MHz)	Traffic Type	Name	Remark
WX01	162.550	NOAA Weather Channel	NOAA WX	RX only
WX02	162.400	NOAA Weather Channel	NOAA WX	RX only
WX03	162.475	NOAA Weather Channel	NOAA WX	RX only
WX04	162.425	NOAA Weather Channel	NOAA WX	RX only
WX05	162.450	NOAA Weather Channel	NOAA WX	RX only
WX06	162.500	NOAA Weather Channel	NOAA WX	RX only
WX07	162.525	NOAA Weather Channel	NOAA WX	RX only
WX08	161.650	CANADIAN Weather Channel	CANADA WX	RX only
WX09	161.775	CANADIAN Weather Channel	CANADA WX	RX only
WX10	163.275	NOAA Weather Channel	NOAA WX	RX only

EAS (Emergency Alert Systems) alerts

National Codes Nature of Activation	Event Codes	Message
Emergency Action Notification (National only)	EAN	WARNING
	EAT	ADVISORY
National Information Center	NIC	ADVISORY
National Periodic Test	NPT	TEST
Required Monthly Test	RMT	TEST
Required Weekly Test	RWT	TEST

State and Local Codes Nature of Activation	Event Codes	Message
Avalanche Warning	AVW	WARNING
Avalanche Watch	AVA	WATCH
Blizzard Warning	BZW	WARNING
Child Abduction Emergency	CAE	WARNING
Civil Danger Warning	CDW	WARNING
Civil Emergency Message	CEM	WARNING
Coastal Flood Warning	CFW	WARNING
Coastal Flood Watch	CFA	WATCH
Dust Storm Warning	DSW	WARNING
Earthquake Warning	EQW	WARNING
Evacuation Immediate	EVI	WARNING

Draft v5-0
27 Feb 2014

State and Local Codes Nature of Activation	Event Codes	Message
Fire Warning	FRW	WARNING
Flash Flood Warning	FFW	WARNING
Flash Flood Watch	FFA	WATCH
Flash Flood Statement	FFS	ADVISORY
Flood Warning	FLW	WARNING
Flood Watch	FLA	WATCH
Flood Statement	FLS	ADVISORY
Hazardous Materials Warning	HMW	WARNING
High Wind Warning	HWW	WARNING
High Wind Watch	HWA	WATCH
Hurricane Warning	HUW	WARNING
Hurricane Watch	HUA	WATCH
Hurricane Statement	HLS	ADVISORY
Law Enforcement Warning	LEW	WARNING
Local Area Emergency	LAE	WARNING
911 Telephone Outage Emergency	TOE	WARNING
Nuclear Power Plant Warning	NUW	WARNING
Radiological Hazard Warning	RHW	WARNING
Severe Thunderstorm Warning	SVR	WARNING
Severe Thunderstorm Watch	SVA	WATCH
Severe Weather Statement	SVS	ADVISORY
Shelter in Place Warning	SPW	WARNING
Special Marine Warning	SMW	WARNING
Special Weather Statement	SPS	ADVISORY
Tornado Warning	TOR	WARNING
Tornado Watch	TOA	WATCH
Tropical Storm Warning	TRW	WARNING
Tropical Storm Watch	TRA	WATCH
Tsunami Warning	TSW	WARNING
Tsunami Watch	TSA	WATCH
Volcano Warning	VOW	WARNING
Winter Storm Warning	WSW	WARNING
Winter Storm Watch	WSA	WATCH

For more information about the Emergency Alert System and event codes, visit: http://www.nws.noaa.gov/os/eas_codes.shtml Simrad

Appendix 12 - EU VHF marine channel charts

Draft v5.0
27 Feb 2014

The following channel charts are provided for reference only and may not be correct for all regions. It is the radio operator's responsibility to ensure correct channels and frequencies are used for local regulations. For specific channel information for your country, please refer to local authorities.

EU international channel chart

CH	TX (MHz)	RX (MHz)	Mode	Traffic Type	Ship to Ship	Ship to Shore	Name Tag	Remark
01	156.050	160.650	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
02	156.100	160.700	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
03	156.150	160.750	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
04	156.200	160.800	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
05	156.250	160.850	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07	156.350	160.950	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	SHIP-SHIP	
09	156.450	156.450	S	Inter-ship	Yes	Yes	SHIP-SHIP	
10	156.500	156.500	S	Inter-ship	Yes	Yes	SHIP-SHIP	
11	156.550	156.550	S	Port Operations	Yes	Yes	PORT OPS	
12	156.600	156.600	S	Port Operations	Yes	Yes	PORT OPS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to-bridge)	Yes	No	SAFETY COM	
14	156.700	156.700	S	Port Operations	Yes	Yes	PORT OPS	
15	156.750	156.750	S	Inter-ship	Yes	Yes	PORT OPS	⊙ 1W only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	Inter-ship	Yes	Yes	PORT OPS	⊙ 1W only
18	156.900	161.500	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
19	156.950	161.550	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
20	157.000	161.600	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
21	157.050	161.650	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
22	157.100	161.700	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
23	157.150	161.750	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
24	157.200	161.800	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
25	157.250	161.850	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
26	157.300	161.900	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
27	157.350	161.950	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
28	157.400	162.000	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
60	156.025	160.625	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
61	156.075	160.675	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
62	156.125	160.725	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
63	156.175	160.775	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	

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CH	TX (MHz)	RX (MHz)	Mode	Traffic Type	Ship to Ship	Ship to Shore	Name Tag	Remark
64	156.225	160.825	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
65	156.275	160.875	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
66	156.325	160.925	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
67	156.375	156.375	S	Commercial, bridge-to-bridge	Yes	No	SHIP-SHIP	
68	156.425	156.425	S	Port Operations	Yes	No	PORT OPS	
69	156.475	156.475	S	Inter-ship	Yes	Yes	SHIP-SHIP	
70	156.525	156.525	-	Digital Selective Calling - DSC	-----	-----	DSC	Ⓢ
71	156.575	156.575	S	Port Operations	Yes	Yes	PORT OPS	
72	156.625	156.625	S	Inter-ship	Yes	No	SHIP-SHIP	
73	156.675	156.675	S	Inter-ship	Yes	Yes	SHIP-SHIP	
74	156.725	156.725	S	Port Operations	Yes	Yes	PORT OPS	
75	156.775	156.775	S	Port Operations	Yes	Yes	PORT OPS	Ⓢ 1W only
76	156.825	156.825	S	Port Operations	Yes	Yes	PORT OPS	Ⓢ 1W only
77	156.875	156.875	S	Inter-ship	Yes	No	SHIP-SHIP	
78	156.925	161.525	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
79	156.975	161.575	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
80	157.025	161.625	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
81	157.075	161.675	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
82	157.125	161.725	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
83	157.175	161.775	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
84	157.225	161.825	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
85	157.275	161.875	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
86	157.325	161.925	D	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
87	157.375	157.375	S	Port Operations	No	Yes	PORT OPS	Ⓢ
88	157.425	157.425	S	Port Operations	No	Yes	PORT OPS	Ⓢ

Special notes on EU international channel usage

1. LOW POWER (1W) only.
2. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70. This channel is only available on DSC enabled radios.
3. Maybe Duplex in some regions

KEY: S = Simplex operating channel; D = Duplex operating channel.

Inland waterways country-specific table - ATIS ON

For specific channel information for your country, please refer to local authorities.

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CH	Specific Footnotes	Transmitting Frequency (MHz)		Ship to Ship	Ship to Port	Nautical Information
		Ship	Land			
60	a)	156.025	160.625			x
01	a)	156.05	160.65			x
61	a)	156.075	160.675			x
02	a)	156.1	160.7			x
62	a)	156.125	160.725			x
03	a)	156.15	160.75			x
63	a)	156.175	160.775			x
04	a)	156.2	160.8			x
64	a)	156.225	160.825			x
05	a)	156.25	160.85			x
65	a)	156.275	160.875			x
06	a) b)	156.3	156.3	x		
66	a)	156.325	160.925			x
07	a)	156.35	160.95			x
67	a) c)	156.375	156.375			x
08	a) q)	156.4	156.4	x		
68	a)	156.425	156.425			x
09	a) b) c)	156.45	156.45			x
69	a)	156.475	156.475			x
10	e)	156.5	156.5	x		
70	a)	156.525	156.525	Digital selective calling for distress, safety and calling		
11		156.55	156.55		x	
71		156.575	156.575		x	
12		156.6	156.6		x	
72	a) r)	156.625	156.625	x		
13	f)	156.65	156.65	x		
73	f) g)	156.675	156.675			x
14	q)	156.7	156.7		x	
74	a)	156.725	156.725		x	
15	h)	156.75	156.75			x
75	o)	156.775	156.775		x	
16	i)	156.8	156.8			x
76	j) d) o)	156.825	156.825			x
17	h)	156.85	156.85			x
77	a) k)	156.875	156.875	x		
18		156.9	161.5			x
78		156.925	161.525			x
19		156.95	161.55			x

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CH	Specific Footnotes	Transmitting Frequency (MHz)		Ship to Ship	Ship to Port	Nautical Information
		Ship	Land			
79	a)	156.975	161.575			x
20		157	161.6			x
80		157.025	161.625			x
21	a)	157.05	161.65			x
81	a)	157.075	161.675			x
22		157.1	161.7			x
82	l) m)	157.125	161.725			x
23	m)	157.15	161.75			x
83	a) m)	157.175	161.775			x
24	m)	157.2	161.8			x
84	m)	157.225	161.825			x
25	m)	157.25	161.85			x
85	a) m)	157.275	161.875			x
26	m)	157.3	161.9			x
86	a) m)	157.325	161.925			x
27	m)	157.35	161.95			x
87	a) d)	157.375	157.375			x
28	m)	157.4	162			x
88	a) p)	157.425	157.425			x
AIS 1	a) n)	161.975	161.975			
AIS 2	a) n)	162.025	162.025			

General remarks to Country Specific table:

1 The channels for service categories ship-to-ship and nautical information may also be used for vessel traffic -systems by traffic centres.

2 In some countries, frequencies certain channels are used for an other service category or other radio services. These countries are Austria, Bulgaria, Croatia, the Federal Republic of Yugoslavia, Hungary, Moldova, Romania, the Russian Federation, the Slovak Republic, the Czech Republic (with exemption of channels 08, 09, 72, 74 and 86), Ukraine and the Federal Republic of Yugoslavia. The Administrations concerned should make any possible attempt to make these frequencies channels as soon as possible available for the radiotelephone service on Inland Waterways and/or the required service category.

Explanation of specific footnotes in Country Specific table:

a. In the countries mentioned under remark 2, it is strictly prohibited to use this channel.

b. This channel is not allowed to be used between Rhine km 150 and km 350.

- c. In the Netherlands, this channel is used by for its on-scene communications during safety operations on the North Sea, IJsselmeer, Waddenzee, Ooster- and Westerschelde.
- d. This channel may also be used for piloting, mooring, tugging and for other nautical purposes.
- e. This channel is the first ship-to-ship channel, unless the competent authority has designated an other channel. In the countries mentioned under remark 2, it is allowed that the output power is set to a value between 6 and 25 W until 1 January 2005.
- f. In the countries mentioned under remark 2, this channel is used for service category ship-to-port authorities.
- g. In the Netherlands, this channel is used by its national coastguard for communications during oil pollution operations on the North Sea and for safety messages for the North Sea, Waddenzee, IJsselmeer, Ooster- and Westerschelde.
- h. This channel may be used only for service category on-board communications.
- i. This channel may be used only for communications between seagoing vessels and participating land stations in case of distress and safety communications within the maritime sea-areas. In the countries mentioned under remark 2, this channel may be used only for distress, safety and calling.
- j. The output power shall be reduced automatically to a value between 0.5 and 1 W.
- k. This channel may be used for communications with a social character.
- l. In the Netherlands and Belgium, this channel may be used for transmitting messages concerning bunkering and victualling. The output power has to be reduced manually to a value between 0.5 and 1 W.
- m. This channel may also be used for public correspondence.
- n. This channel will be used for an automatic ship identification and surveillance system (AIS) capable of providing worldwide operating on seas and Inland Waterways.
- o. The availability of this channel is on a voluntary basis. All existing equipment shall be capable to of operating on this channel within a ten-year period after the entry into force of this Arrangement.

p. After permission of the competent authority, this channel may be used only for special events on a temporary basis.

q. In the Czech Republic this channel is used for service category nautical information.

r. In the Czech Republic this channel is used for service category ship-to-port authorities

Special channels

Country	Item	Chart	Primary Channel
EU Standard, France, Greece, Spain, Portugal	DSC ON	EUR Default	
UK	DSC ON	EUR Default	M, M2
Belgium	DSC ON	EUR Default	31, 37, 96 (1W)
	ATIS ON	EUR Default	31, 96 (1W)
Norway, Finland	DSC ON		L1, L2, L3, F1, F2, F3
Sweden, Denmark	DSC ON		L1, L2, F1, F2, F3
Italy	DSC ON		
Italy (with coast)	DSC ON		A0, A1, A2, A3, A4, A5, A6, C0, C1, C2, C3, C4, C5, C6, C7, C8, C9
Holland	DSC ON		31 (1W), 37
	ATIS ON	EUR Default	31 (1W)
Germany	DSC ON		
	ATIS ON	EUR Default	
Austria	DSC ON	EUR Default	
	ATIS ON	EUR Default	

Appendix 13 - MMSI and license information

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You must obtain a user MMSI (Marine Mobile Service Identity) and enter it into your RS90 in order to use the DSC functions. Contact the appropriate authorities in your country. If you are unsure who to contact, consult your Simrad dealer.

The user MMSI is a unique nine digit number, similar to a personal telephone number. It is used on marine transceivers that are capable of using DSC (Digital Select Calling).

Depending upon your location, you may need a radio station license for the RS90. You may also need an individual operator's license.

Simrad recommends that you check the requirements of your national radio communications authorities before operating DSC functions.

Countries of intended use in the EU:

AT - Austria
BE - Belgium
BG - Bulgaria
CY - Cyprus
CZ - Czech Republic
DK - Denmark
EE - Estonia
FI - Finland
FR - France
DE - Germany
GR - Greece
HU - Hungary
IS - Iceland
IE - Ireland
IT - Italy
LI - Liechtenstein
LV - Latvia

LT - Lithuania
LU - Luxembourg
MT - Malta
NL - Netherlands
NO - Norway
PL - Poland
PT - Portugal
RO - Romania
SK - Slovakia
SI - Slovenia
ES - Spain
SE - Sweden
CH - Switzerland
TR - Turkey
UK - United Kingdom

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